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IN THE CROWN COURT IN NORTHERN IRELAND
SITTING IN BELFAST

THE QUEEN

v

RAYMOND O'NEILL

RULING (NUMBER 9)
ON THE ADMISSIBILITY OF FORENSIC GAIT ANALYSIS EVIDENCE

David McDowell KC and Michael Chambers (instructed by the Public Prosecution
Service for Northern Ireland) for the Crown
Martin O'Rourke KC and Colm Fegan (instructed by the McIvor Farrell Solicitors Ltd) for
the Defendant

SCOFFIELD J

Introduction

[1] In this case, the prosecution wished to adduce and rely upon the expert evidence of Ms Nadia Asgeirsdottir, who provided a report in relation to forensic gait analysis (FGA). This analysis compared the gait of the person captured on CCTV footage outside the victim's home close to the time of her murder (whom the prosecution alleged to be the offender) on the one hand and the gait displayed in reference footage showing the defendant on the other. The prosecution asserted that this evidence was admissible expert evidence. The defence challenged that assertion on the grounds that the body of knowledge or experience concerned was not reliable; and, alternatively, applied to exclude the evidence on grounds of relevance (because of a contended lack of probative value) and/or at common law or under Article 76 of the Police and Criminal Evidence (Northern Ireland) Order 1989 (PACE).

[2] Ms Asgeirsdottir gave evidence and was cross-examined in a *voir dire* in the absence of the jury on 2 March 2022. I then heard oral argument in relation to the

admissibility of the FGA evidence on 3 March 2022 (with the benefit of detailed written submissions from each side which had been filed some time beforehand). I considered that evidence and the submissions before giving a short oral ruling on 3 March 2022, indicating that I was prepared to admit the FGA evidence, subject to appropriate directions being given to the jury about its use, and was also refusing the application to exclude it. I indicated that I would give fuller reasons for that ruling in writing at a later date and have now been asked to do so by the defence in anticipation of raising this issue on appeal. This written ruling repeats my reasons given orally on 3 March 2022 and elucidates them.

Ms Asgeirsdottir's report

[3] There was some potentially relevant background to the instruction of Ms Asgeirsdottir. An FGA report had previously been obtained by the prosecution from Professor Ivan Birch, dated 13 October 2015. This report formed part of the committal papers upon which the defendant was returned to the Crown Court. In his 'no bill' ruling in this case ([2019] NICC 12), Colton J considered that the opinion which Prof Birch expressed – that his analysis provided “limited support” for the proposition that the figure in the challenged footage and the subject in the reference footage were the same person – should be treated with great care; was of very limited probative value; and really only established that the defendant could not be excluded as a suspect. The defence relied upon this assessment by Colton J, although recognising that I, as the trial judge, was not bound by the view taken by Colton J at an earlier stage of the proceedings and in respect of a different report.

[4] In any event, by the time of the trial, the prosecution no longer intended to call and rely upon Prof Birch. I was told that that was because Prof Birch advised, in October 2019, that, because of advances in the field of FGA, the footage in this case should be re-analysed using the then current practice and methods, in accordance with the Code of Practice which was in the final stages of being adopted at that time. Prof Birch felt unable to re-analyse the footage himself by virtue of having previously analysed it and in order to avoid a risk of cognitive bias which therefore arose if he were to consider the same material again. As a result, the prosecution sought a further expert report and had obtained such a report from Ms Asgeirsdottir, dated 4 November 2019.

[5] Ms Asgeirsdottir's report set out the witness's background and qualifications; the task she had been set; the footage with which she had been provided to examine; a short explanation of FGA; how she had examined the footage; and then explained in detail her analysis and comparisons. The report concluded with her evaluation and conclusions, followed by an expert's declaration. The 'conclusion' section set out a range of limitations within the context of which her conclusions were derived.

[6] As to the core conclusion for the purpose of the trial, when the witness had evaluated the comparison of the features of gait observed, and in drawing conclusions from that evaluation, she had considered two opposing propositions,

namely (i) that the figure in the questioned footage *was* the subject in the reference footage and (ii) that the figure in the questioned footage *was not* the subject in the reference footage. Her conclusion was then expressed in her report as follows:

“Based on my knowledge of human gait, in view of the various combinations of features of gait, and taking into account the limitations listed, it is my opinion that forensic gait analysis provides **limited support** for the proposition that the figure in the questioned footage is the subject in the reference footage. This is an opinion based conclusion and is not predicated on numerical data or statistical calculation. Alternative hypotheses were considered. None were established.”

[bold emphasis in original]

[7] The prosecution proposed to call Ms Asgeirsdottir to give evidence to this effect; and she intended to give evidence to that effect. She acknowledged in her report that ‘limited evidence to support’ was the lowest expression of support available to her, using the scale which she had adopted and which was used in FGA (see Appendix 3 of the report).

‘The Primer’

[8] The defence placed heavy reliance upon a ‘primer’ document for courts published by the Royal Society in November 2017 entitled, ‘Forensic Gait Analysis: A Primer for Courts’ (“the Primer”). I set out below, in full, the ‘Summary’ section of the Primer, given the prominence with which it featured in the defence submissions:

“Forensic gait analysis, the direct visual comparison of two or more video recordings to establish whether they are of the same individual or different individuals based on the gait pattern alone, is a relatively new form of evidence in the UK criminal courts. Its underpinning science is sparse and largely translated from the more developed fields of clinical gait analysis and biomechanics, with more recent insights from biometrics. Care is required, however, in assuming that techniques developed in one field can be applied in another with quite different objectives. The scientific evidence supporting forensic gait analysis, as currently practised, is thus extremely limited.

When forensic gait analysis is used as an aid to positive identification of a suspect, the following matters should be borne in mind:

- There is no evidence to support the assertion that gait is unique within current or foreseeable limitations of measurements used in forensic gait analysis.
- There is no credible database currently that permits assessment of the frequency of either normal or abnormal gait characteristics.
- There are no published and verified error rates associated with the current methodology.
- There are no published black-box studies of analyst reliability and repeatability.
- There is no standardised methodology for analysis, comparison and reporting of gait characteristics.

Excluding a suspect on the basis that their gait is different from that of the individual recorded on video should be less demanding than making a positive identification. However, there is even less evidence to support the use of video in this context. There are several factors that may cause individuals to walk differently on different occasions and these require accounting for before a suspect could be reasonably excluded, and such research is sparse.

A wide range of professionals may present as a Gait Analyst, which is not a legally protected title. There are no academic qualifications in forensic gait analysis per se, and so professionals involved in the field may hold qualifications in a wide range of related areas. The professional or academic background, qualifications or professional registration of an individual are thus unlikely to give unambiguous confirmation of their competence to act as an expert witness in relation to forensic gait analysis evidence.

This report is limited to visual comparisons. Automated methods of extracting data from video and making comparisons are being developed for biometric purposes and the potential for adapting these for forensic purposes is being explored. While these may hold considerable

promise for the future, rigorous testing will still be required to validate their use for evidential admissibility.”

[9] The defence also relied heavily on other sections of this document, including Chapter 3 entitled ‘Science’, and I considered the Primer in full. Within section 4.2 of the Primer, the authors state that:

“It is difficult to see how the use of any verbal equivalent other than ‘weak support for the proposition’ could be used to describe evidence provided by current approaches to forensic gait analysis.”

The witness’s evidence on the voir dire

[10] Ms Asgeirsdottir gave evidence in the absence of the jury before I ruled her evidence to be in principle admissible. She outlined her qualifications and experience, which included a BSc in Biology from the University of Toronto; Advanced Specialty Certificates in Crime Scene Analysis and in Forensic Investigation from the British Columbia Institute of Technology; Certificates of Competence in Barefoot/Foot in Shoe Analysis and in Forensic Gait Analysis from the Chartered Society of Forensic Science (CSFS); and an MSc in Forensic Science (Biology) from the University of Strathclyde. She has full professional membership of the CSFS. She had personally prepared some 45 reports for use in criminal proceedings, including having been instructed by the defence in two cases. She had previously given evidence once (where FGA provided support for the proposition that the defendant and the figure in the questioned footage were *not* the same person). She worked in conjunction with Prof Birch, who has provided around 200 expert reports in the field for criminal proceedings.

[11] Ms Asgeirsdottir gave an introductory description of FGA and its use in the forensic context, as set out in Appendix 1 to her report. She described that the discipline is under constant review and that practitioners had recently created the Sheffield Features of Gait Tool. This is essentially a very detailed spreadsheet listing a wide range of features of gait to be observed in the footage to be compared by an expert, along with categorisations to be used when the relevant feature was observed (namely, ‘marked’, ‘slight’, ‘on some steps’, ‘on the majority of steps’, ‘right side only’ and ‘left side only’). Entries are made separately in relation to the questioned footage and the reference footage and then these are collated and compared. This was the methodology she had used in Table 1 in her report to conduct her analysis in the present case. This tool had been created in 2019 whereas, previously, observed features of gait were essentially just listed. Ms Asgeirsdottir gave evidence that this tool had been peer-reviewed and found reliable (including in a study of her own, which had been published in the *Journal of Forensic Science*).

[12] She referred to the methodology adopted in her report and confirmed that, in her evidence to the jury (if permitted), she would be able to explain her assessment

in relation to the quality of the images used; would be able to deal with the limitations of FGA; and would be able to identify the features she had observed to the jury, explaining to them what those features were and demonstrating them using the footage in evidence and her own body. In cross-examination, she described how the correlations between the two sets of footage were not assessed on a numerical basis. No one feature of gait was given extra weight. The analysis required an evaluation of all of the evidence, taking into account the quality of the footage available (generally looking for footage showing six full steps: three right and three left) and the limitations present. She also explained that the scale of support which was used had been developed by the Association of Forensic Science Providers, based on academic research as set out in Appendix 3 to her report.

[13] The witness was asked about the Primer, which she said was welcomed by FGA practitioners as a good idea but in respect of which practitioners had many concerns. She said the Chief Executive Officer of the CSFS had sent a letter to the publisher of the Primer raising concerns about some of its contents, which were criticised by a number of forensic experts as soon as it was published, but the CEO had received no reply. Her evidence was that the authors of the Primer did not have any personal experience of FGA and did not contact anyone working in the field when it was being prepared. She said it had not been researched properly. She was aware of the limitations of FGA evidence discussed in the Primer, which she accepted, but said that the document was put “into question” because of the current “actual practice” of FGA. She laid considerable emphasis on the adoption of the Code of Practice for Forensic Gait Analysis (“the Code of Practice”) issued by the CFSC and the College of Podiatry, overseen by the Forensic Science Regulator, which post-dated the publication of the Primer. She said that her report complied with that Code and was compiled with the Code in mind.

[14] Mr O’Rourke put the matters set out in the bullet points in the summary of the Primer (set out at para [8] above) to Ms Asgeirsdottir. She said FGA practitioners did not really accept the assertion in the first bullet point because it had never been asserted that FGA could identify anyone from the population. She denied that she had purported to identify the defendant in her report; but said she simply supported the proposition that the person in the challenged and reference footage was the same person, indicating that it *could* be the same person. As gait was not unique, FGA could not *identify* an individual, the witness accepted. However, she said it could limit the pool of suspects or point to it being unlikely that an individual is within that pool based on the features of gait. FGA could allow an expert to say whether an individual was a person of interest or that it was unlikely that they were the offender. She accepted that there was no database which permits assessment of the frequency of either normal or abnormal features of gait, although said that this was being worked upon. She also accepted that her conclusion was an opinion based on observation but maintained that hers was an *expert* opinion based on her training and experience.

[15] The witness also did not accept that the failure rate referred to in section 3.2 of the Primer was accurate and felt that its authors had misrepresented the position in relation to that. Generally, she relied upon the papers referred to in the 'references' section of her report as showing the reliability and quality of FGA, although she accepted that the majority of these pre-dated the Primer. She also referred to her own experience of giving evidence in court in a criminal case in the UK (where her evidence was challenged but not the reliability of FGA generally) and to a case in the United States and one in the UK where there had been such a challenge but the evidence had been ruled admissible.

Relevance and probative value

[16] The defence contended that the FGA evidence should be ruled inadmissible as it was irrelevant, in that it had no probative value. As to these issues, my reasoning was essentially the same as that set out in my ruling on the admissibility of the evidence of the imaging expert, Mr Stephens: see *R v O'Neill: Ruling (No 2) on admissibility of the expert video analysis evidence* [2022] NICC 2. At paras [17]-[21] of that ruling, I set out the need – which was accepted by the prosecution – for expert evidence, as with other evidence, to be *relevant* before it is admissible.

[17] In relation to the FGA evidence, as with Mr Stephens' evidence, the defence contended that it did not allow the Crown to advance a positive case of the defendant's guilt but, rather, merely allowed the prosecution to argue that the gait displayed in the challenged footage did not *exclude* the defendant as being the person shown. Again, Mr O'Rourke KC submitted that the FGA evidence was at best neutral, rather than supportive of the Crown case, and therefore irrelevant. In advancing this submission the defence relied on Colton J's assessment, referred to above, and contended that Ms Asgeirsdottir's evidence was similar to that of Prof Birch.

[18] I rejected the submission that Ms Asgeirsdottir's evidence was of no probative value and thus irrelevant. Even if the proposed evidence was of limited value, it positively supported the Crown case both by indicating *some* support for the proposition that the person seen on CCTV outside Jennifer Dornan's house and the defendant were the same person; *and* by countering any suggestion that they could *not be* the same person (at least as far as the question of gait is concerned). As the prosecution observed, the finding of 'limited support' was above the finding of 'provides *no assistance* in addressing the issue' in the scale of support used by Ms Asgeirsdottir. That rendered it relevant to an issue in the case: indeed, to the key issue of whether the suspect shown outside the victim's home (whom the defence accepted to be the killer) was, or could be, the defendant. The limited level of support which the witness proposed to provide was unsurprising in light of the limitations in this type of evidence generally and was consistent with the view set out in the Primer and recorded at para [9] above. Nonetheless, it was a strand of evidence upon which the prosecution was entitled to rely, if they wished to call her, in what was (at that stage) a circumstantial case. The contention that

Ms Asgeirsdottir's evidence should be given little or no weight was a matter for the jury.

[19] I also did not accept the defence objection that, in expressing the view that her analysis provided "limited support for the proposition that the figure in the questioned footage is the subject in the reference footage", Ms Asgeirsdottir had in some way 'trespassed upon' or infringed the relevant Code of Practice setting out how conclusions within her discipline should be expressed. In my view, her opinion and conclusion were expressed in precisely the way one would expect having regard to section 18.6.8 of the Code of Practice. It is in the following terms:

"The strength of evidence provided by the forensic gait analysis should be expressed using a published scale of verbal expressions of strength of evidence in support of one of two opposing propositions. Generally, the prosecution's proposition would take the form of 'the figure in the questioned footage is the subject in the reference footage.' The alternative proposition is determined by the defence but in the majority of cases takes the form of 'the figure in the questioned footage is not the subject in the reference footage.'"

[20] Mr O'Rourke relied upon section 6.3.1(b) of the Code of Practice, which is in the following terms:

"At the time of writing, examples of known limitations that shall be communicated to the commissioning agency prior to undertaking forensic gait analysis casework include the following:

...

- b. features of gait in isolation have discriminatory potential but cannot currently be used to identify a person from an open population;"

[21] On foot of this, the defence argued that the witness's conclusion (set out at para [6] above) was expressed contrary to the requirements of the Code of Practice because it purported to support the Crown case that the jury could conclude (taking all of the evidence together) that the defendant was the person shown in the questioned footage. Her evidence was identification evidence, it was argued. Leaving aside the issue of this submission's inconsistency with the defence argument that the FGA evidence was entirely neutral and therefore irrelevant, I could not accept it. If this portion of the Code was read in the way Mr O'Rourke submitted, it would limit the conclusions of forensic gait analysts to merely supporting a proposition that a suspect could not be excluded and render it impossible for FGA to ever assist in a positive identification. I considered that that plainly could not be the

meaning of that provision of the Code read fairly and in the context the rest of its provisions, taking them as a whole. Rather, it was making the point that FGA cannot *in isolation* identify a person from an open population at large. It was not precluding FGA evidence providing positive support for a proposition that a person in questioned footage is likely to be the same person as shown in reference footage. Indeed, that type of support was obviously permissible under the Code, having regard to section 18.6.8. Indeed, that is the whole point of the analysis where there are significant shared features between the features of gait identified in each set of footage. In my view, the reference to “discriminatory potential” in section 6.3.1(b) should not be read as meaning “exclusionary potential” or “exclusionary potential only.” Rather, it refers simply to the potential to draw conclusions from the similarities and differences in the footage viewed.

Reliability of FGA evidence generally

[22] That left the objection to the reliability of the scientific discipline of forensic gait analysis *per se*. No issue was taken in relation to the specific expertise of Ms Asgeirsdottir. Nonetheless, it was contended that FGA was not, at this stage, sufficient reliable, or that its reliability cannot be confidently assumed, so as to permit it to be admissible in the trial. The defence relied upon the summary in *Blackstone’s Criminal Practice* (2022) at F11.10 in the following terms:

“Expert opinion must be sufficiently reliable to be admitted in evidence. In the test for the admissibility of expert evidence set out in *Bonython* (1984) 15 ACR 364, which has been cited with approval within the English jurisdiction, regard must be had to, *inter alia*, ‘whether the subject matter of the opinion forms part of a body of knowledge or experience which is sufficiently organised and recognised to be accepted as a reliable body of knowledge or experience.’”

[23] That was accepted by the prosecution. It was noted that *Blackstone* went on to observe that, “However, this condition of admissibility has been applied only rarely.” The prosecution also referred to the judgment of Rose LJ in *R v Luttrell and Others* [2004] EWCA Crim 1344; [2004] 2 Crim App R 31, at para [32]:

“For expert evidence to be admissible, two conditions must be satisfied: first, that study or experience will give a witness’s opinion an authority which the opinion of one not so qualified will lack; and secondly the witness must be so qualified to express the opinion. The first was elucidated in *Bonython* [1984] 38 SASR 45, where King CJ (at p 46) said that the question “may be divided into two parts: (a) whether the subject matter of the opinion is such that a person without instruction or experience in the area

of knowledge or human experience would be able to form a sound judgement on the matter without the assistance of witness possessing special knowledge or experience in the area, and (b) whether the subject matter of the opinion forms part of a body of knowledge or experience which is sufficiently organised or recognised to be accepted as a reliable body of knowledge or experience, a special acquaintance with which by the witness would render his opinion of assistance to the court.”

[24] I did not accept the defence submission that forensic gait analysis was insufficiently reliable to be admitted as expert evidence on the basis that it did not “form part of a body of knowledge or experience which is sufficiently organised or recognised to be accepted as a reliable body of knowledge or experience.” On the contrary, I was satisfied, on the basis of the evidence and submissions considered in the *voir dire*, that it was. My reasons for this were as follows.

[25] First, a variety of courts in the United Kingdom have received such evidence and have considered it admissible on numerous occasions. That was evident from some of the authorities to which I had been referred – most notably *R v Otway* [2011] EWCA Crim 3 in the English Court of Appeal; and, indeed, from the evidence provided by Ms Asgeirsdottir about her experience and that of her colleagues in giving such evidence. Mr McDowell relied on the fact that (as the Primer notes) gait analysis was first admitted as evidence in criminal proceedings in *R v Saunders*, a case heard at the Old Bailey in 2000, and that such evidence had been admitted in UK courts ever since.

[26] In the *Otway* case, which I found of particular assistance since a challenge was made (as here) to the creditability of the FGA discipline, the Court of Appeal rejected the appellant’s submissions that gait analysis was not sufficiently recognised or advanced as a forensic science to merit its use in court. At para [20], Pitchford LJ said:

“Like the judge we consider that the evidence was, in the absence of contradiction, sufficient to establish the existence of (1) the science or expertise, (2) the witness’ proficiency in it, and (3) the foundation for the witness’s opinion.”

[27] The court in *Otway* had considered and rejected a range of arguments which were also advanced before me, including that there was no database by which to judge the significance of FGA findings; that FGA was based on subjective judgement; and that the science itself was not sufficiently reliable (see paras [11], [17] and [19] in that case). Nonetheless, the evidence was admissible provided the features could be demonstrated to the jury to see for themselves, in which case it

could be a supporting strand going to identification in a circumstantial case (see paras [22]-[23]), much as the prosecution wished to use FGA in this case.

[28] *R v Ferdinand, Hashi and Others* [2014] EWCA Crim 1243; [2014] 2 Cr App R 23 was a more recent example of a UK case in which FGA analysis was held to be admissible on appeal. My attention was also drawn to the Canadian case of *R v Aitken* [2008] BCSC 1423 (and, on appeal, [2012] BCCA 134) in which FGA evidence was admitted. These cases indicated that each application to adduce FGA should be considered on its merits and that the evidence was in principle admissible, provided that careful scrutiny and rigorous examination were applied in each case. Although in those cases the relevant experts identified unique or uncommon features of gait which the defendant in question shared with the individual in the questioned footage, I had concluded that the FGA evidence in this case had some probative value and was relevant. The strength of the evidence was a matter for the jury. The more important point to be taken from those cases in my view, in relation to the objection to the reliability of FGA generally, was that such expert evidence could be admissible.

[29] Second, the witness had given oral evidence in the *voir dire* supporting the validity and rigour of the methodology used. She candidly accepted that there were limitations to the assistance which FGA could provide, which were set out in section 7 of her report and which I was satisfied could and would be explored with her in her evidence before the jury. Nonetheless, she maintained the position, on the basis of her qualifications and experience and the detailed analysis and comparison set out in her report, that analysis of gait did provide some support in this case for the proposition that the suspect in the CCTV footage and the defendant in the known footage were the same person. She maintained this position even taking into account the limitations she had identified, many of which were relied upon by the defence in support of their application. I was also satisfied that the recent introduction of the Code of Practice and the Sheffield 'Features of Gait Tool Analysis' brought a further layer of rigour and scientific method to the analysis than would have been the case in relation FGA which had been ruled admissible in earlier cases.

[30] Third, although the defence relied strongly on the Primer, Ms Asgeirsdottir explained that both the tone and content of that document was challenged – by her and other experts in the field – in a number of significant respects. Perhaps more importantly, however, there were three further points:

- (a) The Primer itself, although requiring considerable caution to be exercised, proceeded on the basis that FGA *will* be used by courts in some instances as an aid to identification of a suspect. It is not an enjoiner to courts that such evidence should not be received. On the contrary, it is designed (at least in part) to ensure proper use of such evidence when it *is* received. I was satisfied that the limitations to which the Primer drew attention could be explored

with the witness in cross-examination and could be reflected in directions to the jury about its approach to FGA evidence.

- (b) Ms Asgeirsdottir also provided evidence of changes or improvements to the methodology used by experts in FGA, including herself, since the publication of the Primer (which had been published over four years before she was coming to give evidence). Such changes included in particular the adoption of the Sheffield Features of Gait Tool and the draft Code of Practice (and later, the adopted Code of Practice) which were discussed in her evidence. These changes were designed to make the analysis more robust and meet some of the concerns raised in the Primer. In particular, this addressed a major criticism in the Primer, namely that there was no standardised methodology for analysis, comparison and reporting of gait characteristics. That was no longer the case.
- (c) The defence called no evidence to support the concerns or limitations referred to in the Primer – either from another FGA expert or, more generally, an expert in forensic analysis or scientific method (for example, a contributor to the Primer). I took into account the potential practical difficulties which there may be in securing evidence from another FGA practitioner in this regard; but it seemed to me that the objection was really a more general one in relation to scientific method, in respect of which an expert might have been found to criticise the methodology used, who could have been called by the defence in the *voir dire*. The absence of contradictory expert evidence was considered significant in *Otway* (see paras [10] and [21]). As it was, I only had the benefit of Ms Asgeirsdottir's evidence on these issues, which had been tested in cross-examination. Whilst she had made some concessions about the limitations of this type of evidence (which I considered could and would be reflected in directions to the jury), including that FGA evidence ultimately resolves to a matter of expert opinion, she robustly defended the reliability of the analysis and its underlying scientific basis.

[31] As noted above, Ms Asgeirsdottir conceded that her evidence ultimately involved an opinion on similarities/differences in gait and their significance. I did not consider that, of itself, to be objectionable. Provided the opinion was one of an expert, opinion evidence is admissible. The question for the court – applying the test set out in *Luttrell and Others* – was whether the subject matter of the opinion “forms part of a body of knowledge or experience which is sufficiently organised or recognised to be accepted as a reliable body of knowledge or experience” with which the witness is specially acquainted. In other words, is FGA such a body of knowledge or experience?

[32] The question was whether that body of knowledge is sufficiently organised or recognised to be reliable; not whether the witness's expert opinion is reliable. I was satisfied that forensic gait analysis is both sufficiently organised *and* recognised, for the reasons already referred to above. Those reasons included its use and

endorsement repeatedly by courts in this jurisdiction. They also included FGA's basis as set out and now explained in the Code of Practice published by the Chartered Society of Forensic Sciences and the College of Podiatry and produced in association with the Forensic Science Regulator. I had doubts as to whether establishing that there is such a body of knowledge or experience which is sufficiently organised or recognised to be accepted as a reliable body of knowledge or expertise was a question of fact on which the prosecution bore the burden of proof to the criminal standard; but, in any event, I was sure that it did constitute such a body.

[33] I further accepted the submission of the Crown that concerns expressed in academic journals did not displace the position established in authorities such as *Otway* and *Ferdinand* that this type of analysis is, or may be, in principle admissible and useful. Reliance on academic articles without calling evidence in the *voir dire* to challenge the reliability of the discipline generally was little better than the "bare assertion" of the scientific method lacking reliability which had been rejected in *Otway* (at para [21]).

[34] I also considered that the Australian case of *R v Crupi* (Ruling No 1) [2020] VSC 654, which was relied upon strongly by the defence, could readily be distinguished in a number of respects. The defence submitted that the *Crupi* case had a number of similarities with the present case. They relied upon the fact that, in *Crupi*, FGA evidence was excluded and that it was decided after the Primer had been published. In my view, the key distinction between that case and the present was that the witness in the *Crupi* case was not considered to be an expert (see para [97]). In light of that, and the striking weaknesses in the witness's experience and analysis in the *Crupi* case which are discussed at paras [27]-[37] and [86]-[88] of the judgment, it was entirely unsurprising that the evidence was excluded. Moreover, in the present case, Ms Asgeirsdottir did not purport to say (as the witness had in *Crupi*) that the gait was "remarkably similar" in the questioned and reference footage. Her evidence was of more limited evidential value. It was this feature – the suggestion that the gait between challenged and reference footage was "remarkably similar" – which principally led Beale J to consider that there was a risk that the jury might attach more weight to the FGA evidence than it deserved. It was this opinion which created "the greatest risk" (see para [119] of the judgment). Notwithstanding that, Beale J considered that that danger could be dealt with by directions about the limitations of the evidence. I did not harbour the same concerns about the evidence in this case as arose in *Crupi*.

Exclusion at common law and/or under Article 76 of PACE

[35] Finally, the defence contended that the prejudicial effect of the FGA evidence outweighed its probative value, or that its admission would have such an adverse effect on the proceedings that the court ought not to admit it and invited me to exclude the evidence on these bases. The fact that the probative value of the proposed FGA evidence may be modest, even on its own terms, was in my view a

matter which significantly *reduced* the risk of its prejudicial effect outweighing its probative value. In short, since the support the witness's evidence was likely to offer to the Crown's case was limited, and in light of the limitations in the evidence which would be drawn to the jury's attention, I did not consider that the evidence ought to be excluded under Article 76 of PACE. In particular, the witness accepted that gait was not unique to an individual; that there was no statistical analysis about how common or uncommon the gait features identified were in the general population; and that she could not say, nor was she purporting to say, that the figure in the challenged footage was actually the defendant. Her evidence merely provided limited support to the proposition that they were the same person.

[36] I considered that the jury would be able to understand the nature and effect of this evidence and that, insofar as they determined it should be given weight, its prejudicial effect would not outweigh its probative value. In this respect, I accepted the prosecution's submission, based on Lord Lane CJ's judgment in *R v Quinn* [1990] Crim LR 581, that proceedings are normally fair if a jury hears all relevant evidence which either side wishes to place before it and which can be properly challenged or met. I did not consider that the witness's evidence would give her opinion an unwarranted 'veneer of objectivity' which would overwhelm the jury. As with many types of expert opinion evidence which is admissible, her opinion could be probed and tested and would be the subject of comment by counsel and direction by me in due course.

Conclusion

[37] As a result of the analysis above, I concluded that the prosecution was entitled to call Ms Asgeirsdottir. In summary, I concluded that:

- (a) Ms Asgeirsdottir's proposed evidence had some probative value, albeit that was limited, such that it could not be excluded for irrelevance, should the prosecution wish to call her.
- (b) FGA, albeit still a relatively young discipline, was sufficiently organised and recognised to be accepted as a reliable body of knowledge or experience. The recent adoption of the Sheffield Features of Gait Tool and Code of Practice gave further reassurance in this regard.
- (c) Ms Asgeirsdottir had established her expertise to give opinion evidence in this discipline.
- (d) The limitations and vulnerabilities in her method and analysis could, and would, be robustly challenged in cross-examination and drawn to the attention of the jury both by that means and in judicial directions to them.

- (e) Ultimately, the weight to be attributed to her evidence, if any, as a result of those matters was properly a matter for the jury; and it would not be unfair to admit her evidence.

[38] I also determined that, in accordance with the authorities, a careful warning about the limitations of FGA evidence (several of which the witness accepted in her evidence in the *voir dire*) would be given to the jury in due course. As a result, I first gave an interim direction to the jury in advance of the witness giving her evidence, shortly after the ruling which has been explained in this written ruling, so that the jury could bear it in mind whilst they heard the evidence. This included a warning that the features of gait Ms Asgeirsdottir discussed should be features which were demonstrable to the jury, so that they could see them in their own assessment of the CCTV evidence, even though they were not experts in the field; and a warning that there are some known limitations of that particular field of science in supporting an identification of a suspect, which would likely be discussed with the witness in the course of her evidence, and on which I would give them further direction in due course at the end of the case.

[39] I also gave a more lengthy direction during my charge to the jury as to how the FGA evidence should be approached. Both of these directions should be available on the transcript of the proceedings.