Brain-based mind reading for lawyers: reflecting on possibilities and perils

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Peer Commentary

Brain-based mind reading for lawyers: reflecting on possibilities and perils

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Gerben Meynen's article provides, from a legal perspective, a useful starting point to distinguish between the different types of technologies which offer the possibility of 'brain-based mind reading'. It is timely because, as he points out, the first profession that is likely to use these technologies, when they become more accurate, are forensic psychiatrists. As forensic psychiatric assessments are widely used in the criminal court room by judges and in adversarial justice systems by prosecution and defense, then what he has to say is of interest to the law. Moreover, there is no doubt that the use of these technologies raises questions that need to be addressed by lawyers.

Meynen's article examines some of the incentives that exist to use such technologies, quoting a forensic psychiatrist, Don Grubin, who argues that the use of traditional lie detection technology, *type I* technologies could greatly assist forensic investigations. Indeed, Grubin makes the claim that in respect of the polygraph testing of sex offenders the question for a forensic psychiatrist should not be should it be used, but rather why it should not be used.[1] Such suggestions, especially when they provide for quicker and cheaper investigatory process, could be very attractive to governments that are looking for a less costly and more effective way to conduct criminal investigations and shorten the trial process.

Practitioners of law are likely to be interested in these technologies for at least three reasons. Firstly, much research has been done into how memory is laid down, and this reveals that subjective reports of memories of events are fallible. Furthermore, judgements made by lawyers and lay people of the veracity of evidence given in court are

[1] https://www.gov.uk/government/news/compulsary-lie-detector-tests-for-serious-sex-offenders accessed on Aug. 18, 2017, demonstrates that the UK government, supported by Grubin, set up a training program for probation officers. The aim was to train them to use lie detection technologies to monitor known sex offenders released from prison.

likely to be flawed.[2] This is said to be because most people do not understand the processes by which memories are laid down and how memories are altered in the process of recall.[3] Therefore, being able to discern, using objective rather than subjective measures, whether someone is telling the truth could be very useful to the courts. Additionally, were fMRI scans or other brain-based techniques to become able, in the future, to discern and precisely identify knowledge and propositional attitudes in the manner suggested in the article for *type II* and *III* brain-based mind reading, it could open a window into the minds of people accused of crime. This knowledge of what the accused knew of salient facts relevant to the criminal event and of the dispositions of an accused would provide meaningful, and potentially very valuable, objective evidence from which the case for or against an accused could be constructed.

This raises a number of ethical concerns to lawyers. Firstly, there is a concern that relates to the clarity of roles in the process of hearing a case. These concerns are relevant both at trial and in regulating the access to and the use of information leading to prosecution by prosecuting authorities. These concerns relate to the historic ideal that justice must be seen to be done. The reason that trials are public is tied to the idea of the rule of law. In England, trial by a jury is part of the bundle of rights won from despotic rulers that aim to protect individuals from arbitrary arrest and unmerited detention and punishment by the state.[4] Thus, there is understandable concern that evidence could be tendered in court which would usurp the role of the jury. Daniel Schacter and Elizabeth Loftus consider this point when reviewing the use of neuroscientific evidence to determine whether a defendant's or a witness's memory is false. They suggest that it is possible to avoid the jury being 'led' by brain-based evidence. Schacter and Loftus argue that, to avoid misleading juries, brain-based evidence could be adduced in court together with an explanation of the nature of the evidence and how it should be interpreted.[5] Explaining why the evidence is relevant routinely happens with other types of forensic evidence such as fingerprint or DNA evidence. However, there are understandable reservations about the use of *types I(2), II, and III* brain-based evidence in the courtroom. Perhaps the most pertinent issue to be drawn to the jury's or judge's attention would, in these circumstances be the reverse inference problem. Expressed as 'the misguided and incorrect attempt to conclude from observation of activity in an area that a particular mental process was taking place'.[6]

Meynen suggests that in some types of brain-based mind reading information is being obtained directly from the brain without the individual being able to meaningfully consent to the process. This is because the individual is not directly responding to questions but rather to the use of a technique of measuring responses. For example, the concealed information test that aims to use encephalography to measure an individual's reactions to facts relevant to the commission of a crime. The brain reaction to the objects that are salient cannot be inhibited, provided that the individual cooperates with the test. Drawing inferences from brain-based evidence about an individual's knowledge

[2] Maria Hartwig & Charles F. Bond Jr, *Why do lie-catchers fail? A Lens Model Meta-Analysis of Human Lie Judgments*, 137 Psychol. Bull. 643 (2011).

[3] British Psychology Society, Guidelines On Memory And The Law, 2008

[4] For a fuller discussion of this, see John M. Beattie, Crime And The Courts In England: 1660–1800 (1986).

[5] *Memory and Law: What Can Cognitive Neuroscience Contribute?* 16 Nat. Neurosci. 119, 223 (2013).

[6] The Royal Society, Neuroscience And The Law (2011).

or propensity to behave in a certain manner is deeply problematic. This would be the case even if there were no reverse inference problem. Not the least because some of the evidence that has been through a process of scientific evaluation is likely to be subject to errors of interpretation. Additionally, it may contain some false positives within its results. These problems are all the more difficult to deal with because errors in expert evidence are unlikely to be detectable to the lay person, legal practitioner, or judge. Judges and juries are used to evaluating human behavior based on their experience. They are not normally scientifically qualified in a manner that will assist in evaluating brain-based evidence.

The second reason that such evidence might be useful to the criminal justice system is that a deeper understanding of when and whether a convicted offender is safe to release into the community, would be extremely helpful at the sentencing stage of a trial. Such diagnoses could be very helpful if they were able to more accurately identify those who posed a real risk to society. This point is strongly related to the third reason that the law may find such evidence attractive. This is that should neuroimaging become highly accurate at identifying medical conditions affecting criminal behavior, then this would greatly assist those accused to tender relevant pleas, and those prosecuting to select the most appropriate charge. Additionally, objective evidence of medical conditions relevant to a defense would be useful to a court. It should also permit those accused and convicted of a crime to be offered and gain access to treatment that might make them less of a risk to the general public.

This argument is a counterweight to the argument made above regarding expert evidence usurping the role of the jury. Here the evidence has a practical value and could be instrumental in aiding a judge to make more informed disposal decisions. This suggests that a distinction may be made between diagnostic expert evidence in court leading to an authoritative diagnosis of a legally relevant medical condition and more general expert comments about the disposition, predispositions, concealed knowledge, and other mental states of an accused that are not strictly relevant to a medical diagnosis. The distinction being made here is between intrusions into private mental states, in an attempt to trawl for information relevant to a criminal case, and a medical investigation into the neurological symptoms of those with recognized medical conditions.

Before examining the concerns about privacy, it would be a good idea to briefly explore the research evaluation surrounding the use of brain reading evidence in the courtroom. This may help to understand whether such evidence would have a detrimental effect on the decision-making capacities of the courts. It is worth noting that in criminal cases the law is only interested in establishing the truth of facts that are relevant to the crime charged, or to the defense argued. The feature of this type of analysis of veracity is that, unless there is objective corroborating evidence, it is a subjective judgement. That subjective judgement is dependent on the assessments made by lay people and/or a judge of the strength or weakness of the case against the accused. It would be useful to know how much this subjective judgement might be affected by the use of information gained from the technologies discussed by Meynen. Frances Shen et al. investigated this issue in relation to *type I* brain-based reading techniques. The investigation included a review of the research data relevant to the use of neuroimaging in court and of empirical evidence of the use of encephalography-based evidence. The finding of the research was that 'neuroscience

evidence does affect outcomes, but that it has a weaker effect than the strength of the case'.[7]

Why is it that there are concerns about privacy? Sarah Richmond points out that we are inclined to see the mind as private and that since the Stoics the mind has been viewed as a 'haven for private contemplation'. She comments that the idea that neurotechnologies may improve to the point where it can intrude on this private space 'has great power to disturb'.[8] Privacy is often ill defined as is acknowledged by Roger Brownsword. He suggests interests in 'opacity', keeping information to oneself, are confused with interests to have transparency: 'an agent's interest in knowing when, and for what purpose, information is being collected'. Discussing opacity interests, Brownsword suggests that this interest relates to the control we have over 'access to information about ourselves'. In this sense, the concerns about a forensic investigator trawling through our minds for evidence of relevance to a criminal event becomes a concern. This concern engages directly with the arguments about the rule of law, and what constitutes a fair trial process. The ability to identify information which may not be precisely germane to the criminal offense is covered by *type I(2), II, and III* techniques as described in Meynen's article. Arguably traditional lie detection is less opaque to the individual questioned, in that the questions are direct and the participant knows how the information obtained is likely to be utilized.

Brownsword explores the notion of privacy rights in relation to the interception of private information. His conceptual analysis is useful here as it suggests there may be an 'inner sanctum' of interests that could be identified as in need of protection. But he is not confident that such a conceptual interest is capable of definition and regulatory protection. He cautions against tying such analysis to specific brain regions.[9] In providing categories of typology that are not linked to specific brain regions, Meynen's analysis potentially makes the evaluation of which of the two categories of interests that are affected by proposed brain reading a little easier. This is because the proposed typology of brain-based mind reading specifies what the purpose of the measure is, how it is carried out, and what information the technique is seeking to obtain. This will assist at least in terms of transparency interests.

The concerns surrounding consenting to brain-based investigation techniques, expressed by Meynen, are relevant to the law and are identified by Brownsword as an interest to achieve transparency in the purpose and future use of the forensic assessments. Therefore, the future uses to which the information obtained may be put ought to be made clear to those taking part in brain-based mind reading tests. Obtaining the real consent of any person accused of crime to the process of forensic diagnosis and keeping the integrity of the valued professional ways of working is clearly a central concern to Meynen. However, it may be in the accused's interests to cooperate with the investigation, particularly if it is clear from other corroborating evidence that they have committed the crime with which they are charged.

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[7] Francis X. Shen et al., *The Limited Effect of Electroencephalography Memory Recognition Evidence on Assessments of Defendant Credibility* (2017) doi:10.1093/jlb/lsx005.

[8] Sarah D. Richmond, Introduction in I Know What Your Thinking: Brain Imaging And Mental Privacy (Sarah Richmond , Gerraint Rees & Sarah Edwards, eds, 2012).

[9] See footnote 6.

Brownsword underlines the danger to transparency in interpreting the investigation as routine. This is a concern that is difficult to address in an era of significant data retention when the ability exists to store and analyse data in ways that have not previously been possible. A forensic psychiatric examination may seem to the parties involved to be routine. What might 'real consent' look like in this forensic investigatory environment? The results of investigatory brain scans or of electoencephalography (EEG)-based tests may be retained on forensic or medical databases for years. Is it possible to give or to seek informed consent to the collection and storage of data that may be accessed years later to obtain information about criminal conduct?

It is difficult to seek informed consent from an individual to the retrieval and storage of a visual record of information about their brain when the record of a brain scan or EEG may be subject to future scientific interpretation. This interpretation could be based on scientific research that was not possible to compass at the time of the original forensic investigation? How can the forensic psychiatrist explain this risk to a client?

It is possible that the law could seek to regulate the use of such information and make the use of the information specifically limited to the time, place, and circumstances in which that information was collected. The practical problem with this is that protecting such data will be difficult. It may be held in different countries and be accessible by many agencies. Such information may not even be used in criminal proceedings but may become available to employers and to insurance companies. If this happens, then this may seriously affect the economic and social prospects of the person who cooperated with the investigatory process.

Meynen's use of a tripartite classification to distinguish the forensic means of brain-based mind reading to assess an individual's liability for criminal acts is to be welcomed. It is a meaningful addition to the discussion that needs to continue about the use and relevance of these technologies to assist in providing evidence from which to determine the guilt or innocence of an accused person.