The Future of Brain-Based Lie and Memory Detection: Beyond the Courtroom

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Emerging brain-based lie detection and memory detection techniques, using electroencephalography (EEG) and functional Magnetic Resonance Imaging (fMRI), have been commercialized and proffered in legal proceedings.[1] Legal scholarship has focused on questions of admissibility and constitutionality that arise from courtroom use these brain-based detection technologies.[2] But generally overlooked are equally important questions about the potential use of brain-based detection technology *outside* the criminal courtroom, for instance in employment screening, criminal investigation, and divorce and child custody proceedings. [3]

This paper examines these non-courtroom uses of brain-based detection technologies, evaluating three barriers to their adoption. First, the paper addresses the legal barriers, analyzing in detail the Employee Polygraph Protection Act (EPPA). The paper argues that despite the EPPA, and related state legislation, the law allows for many ways in which brain-based lie detection may be used, and even more flexibility for the use of brain-based memory detection techniques.

Even if the legal barriers are permeable, a second barrier is the economic feasibility of brain-based lie detection. The paper posits that although it can't be known for certain, the future costs of at least some forms of brain-based detection are likely to drop sufficiently low as to be competitive with the polygraph in at least some situations.

If, as the paper suggests, the legal and economic barriers can eventually be overcome, then a third issue arises: can brain-based truth verification and memory detection provide accurate and reliable information that will enable improved guesses about whether an individual is being honest? The paper concludes that the scientific challenges are great, but that even premature technology – *if perceived by subjects to be effective* – may generate useful information for investigators and employers.

The paper concludes with a proposal for a research paradigm to systematically test the effects of brain-based lie detection on employer and prosecutor decision making. The paper also develops a series of principles to guide the governance of the brain-based lie detection industry.

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[1] *United States v. Semrau*, No. 07-10074 (W.D. Tenn. 2010); *Harrington v. State*, 659 N.W.2d 509 (2003).
[2] Paul S. Appelbaum, *The New Lie Detectors: Neuroscience, Deception, and the Courts*, 58 Psychiatric Serv. 460 (2007). Frederick Schauer, *Can Bad Science Be Good Evidence? Lie Detection, Neuroscience and the Mistaken Conflation of Legal and Scientific Norms*, 95 Cornell L. Rev. 1191 (2010); Francis X. Shen & Owen D. Jones, *Brain Scans as Evidence: Truths, Proofs, Lies, and Lessons*, 62 Mercer L. Rev. 861 (2011).
[3] Though see: Henry T. Greely & Judy Illes, *Neuroscience Based Lie Detection: The Urgent Need for Regulation*, 33 Am. J.L. & Med. 377, 385 (2007); Henry T. Greely, *Premarket Approval Regulation for Lie Detections: An Idea Whose Time May Be Coming*, 5 Am. J. Bioethics 50 (2005).