



© Dmitrijs | AdobeStock

Lawyering Competence to Stand Trial with an Eye on Neuroscience

Should courts and lawyers in criminal cases be encouraged to include neuroscience in competence inquiries? Yes, lawyers addressing competence issues should gain familiarity with neuroscience-related literature, and should help courts do so as well. Lawyers should be able, particularly when the hypothesis about incompetence is being linked to possible brain dysfunction, to consider neuroscience-related techniques that could provide explanations about (and corroborating evidence of) the genuineness of the individual's incompetence. This article discusses neuroscience literature and neuroimaging case law that can help counsel effectively represent a client when competence is an issue.

Competence-Related Literature

A few of the existing lawyering approaches published over the last 30 years have pointed lawyers toward a combination of case law and works specific to competence-related assessment methods used by forensic mental health experts.¹ Lawyers looking for guidance about “best practices” from competence-related casework can learn about some of the more extensive and thorough lawyering efforts by reviewing the few extensive judicial opinions and orders

on competence findings. These opinions and orders discuss consultation with and testimony from experts, input from lay witnesses, and recordings and writings of the accused.² Most experienced judges and lawyers understand that there are standardized testing-based assessment systems and protocols used by forensic mental health professionals focused on the assessment of competence to stand trial. Most are aware as well that the evaluation of trial competency is arguably the most common way that forensic mental health professionals are involved in the criminal justice system.³

Melton et al.'s *Psychological Evaluations for the Courts*, 4th edition (2018) and Gold and Frierson's *Textbook of Forensic Psychiatry*, 3d edition (2018) contain updated and expanded chapters devoted to competence assessments. The *Textbook of Forensic Psychiatry* contains a chapter titled “Neuroimaging and Forensic Psychiatry” that discusses “neuroimaging and criminal competencies.” It discusses cases involving imaging studies that resulted in part because of extensive factual differences — and two different competence-related outcomes notwithstanding the neuroscience input.⁴ The American Academy of Psychiatry and Law has added a 2018 Practice Resource to its extensive 2007 “Practice Guidelines for the Forensic Psychiatric Evaluation of Competence to Stand Trial.” The 2007 Guidelines explain that forensic psychiatrists reviewing competence-related data should review any available imaging studies.⁵

It is now evident to experienced forensic examiners and lawyers alike that the assessment of competence to stand trial is the assessment of an individual's legally defined and legally significant condition in relation to the adjudication of a criminal case. While some commentators have lamented that courts and lawyers defer deci-

BY JOHN T. PHILIPSBORN

sion-making on competence issues to mental health professionals, judges and lawyers who understand the endeavor would disagree. It does not escape them that forensic mental health professionals do not have tools that cover *all* the salient questions. The specialized interview formats in competence assessments and the second generation standardized competence assessment tools in common use today help to address some, but not all, of these questions. While some of the unanswered questions are outside the scope of this article (including how to assess the accused's ability to assist counsel), imaging studies and neuroscience information should be considered useful sources of competence information.

Defense lawyers should consider developing evidence that provides further explanation for (or corroboration of) a claim of incompetence. For example, counsel should consider further information about a brain dysfunction related to a detected language processing deficit, further confirmation of dysfunction associated with apparent memory problems, findings consistent with brain structure atrophy, and dysfunction findings consistent with impairments detected through neuropsychological testing. Brain imaging studies have proven significant when addressed by neurologists, radiologists, psychiatrists, or neuroscientists who have consulted on the case. The AAPL anticipated this situation in its "Practice Guide" when it referenced imaging studies as possible data sources about an individual's competence.

Established nationwide medical, legal, and advocacy organizations have focused on how diminishing capacities observed as persons age should be studied and addressed. The American Psychological Association's *Assessment of Older Adults with Diminished Capacity* (2008) referenced imaging studies as a factor that may be included in baseline information about an individual's functioning. Several discussions of the implications of assessing "mental capacity" in an aging population reference information resulting from neuroscience-based studies.⁶

Surprisingly, however, not only do many of the highly accessible works on the assessment of competence to stand trial *not* reference imaging studies, but also they fail to note that major publications and practice guidelines related to competence and capacity assessments have at least referenced the need to consider imaging studies. Professor Michael Perlin (mental disability law) and Alison

Lynch (disability rights attorney) observed that "scholars and judges have paid almost no attention to the potential impact of neuroimaging in trial competency. Less than a handful of cases consider the use of neuroimaging of trial competency on the merits. ..."⁷ Yet, Perlin and Lynch have usefully sought to explain how neuroscience techniques — that include imaging brain structure and both illustrating and reporting on brain function — can, where integrated into a competence assessment, "serve to highlight or provide missing data about that mental state."⁸ The co-authors make a further salient point: "[F]act-finders in criminal cases have an unquenchable thirst to learn what is in the defendant's head. ... We hope that a prudent approach to neuroimaging evidence will ameliorate the situation."⁹ The point is worth underscoring, particularly since training programs for lawyers on competence assessment rarely touch on the utility of lawyers having at least some familiarity with the intersection between neuroscience and competence assessment.

A Competence Assessment Refresher

The fundamental "elements" of competence as defined by the U.S. Supreme Court can be easily summarized. The Court has explained that the competence requirements are that the accused have the following: (1) a rational as well as factual understanding of the proceedings against him; (2) sufficient present ability to consult with counsel with a reasonable degree of rational understanding; (3) the capacity to understand the objective of the proceedings; and (4) the capacity to consult with counsel and to assist in preparing the defense.¹⁰ In several decisions that have further explained the legal condition of competence (and incompetence) to stand trial, the Supreme Court explained and discussed the areas of awareness and decision-making that a competent accused must have during the adjudication — whether by guilty plea or trial — of the case. These explanations were offered in *Godinez v. Moran* and revisited in *Cooper v. Oklahoma*.¹¹

The contemporary assessment of competence is one that tracks the legal questions that should be addressed when competence is at issue and thus includes both testing and interview strategies that are specific to competence. Dr. Thomas Grisso has explained that a competence assessment process should have functional, causal, and interactive objectives.¹² It "should describe the defendant's strengths and deficits in the functional abilities to which the legal standards for competence

to stand trial refers." These functional abilities include the accused's understanding, appreciation, reasoning, and communication, as these factors are further described by Grisso and others.¹³

Current best practices literature indicates that there can be a number of underlying causes for incompetence, and rulings from some jurisdictions clarify that the underlying mental disorders need not be linked to a diagnostic manual or category. The objective is to describe a likely cause that is logically linked to observed symptoms, deficits, or disabilities.¹⁴ The use of neuroscience-related assessment can help corroborate a finding of cause or the existence and/or genuineness of a symptom.

Some Neuroscience Basics

Lawyers unfamiliar with neuroscience should consider consulting the "Law and Neuroscience Recommendations Submitted to the President's Bioethics Commission" (2014).¹⁵ In this publication, which was meant to help shape the future of the neurosciences in the legal system, the co-authors focus on the neurosciences as involving research techniques including imaging studies to assist in understanding "both brain structure and brain function."¹⁶ They explain advancements made by researchers:

[In combining imaging techniques with] new non-invasive techniques with behavioral measures, scientists have made impressive progress toward learning such things as the brain activity associated with perception, memory, and thought; how goals are represented at the neural level; how brain development is related to cognitive capacities; the brain activity associated with goal-directed behavior; and the relationships among brain states, decision-making processes, and mental health.¹⁷

Neuroscience-related literature describes how the brain is studied using various techniques, including electrophysiological and imaging studies. These works describe how certain activities — such as hearing, seeing, processing and coding information, memory speaking, prompting movement, assessing situations and responding to them, social interaction, emotional regulation, and the like — can be studied using the recently developed array of neuroscience-involved methodologies.¹⁸ Lawyers who have worked with neurologists, radiologists,

and neuroscientists will recognize electrophysiological methods of brain study, including electroencephalograms (EEG) and event-related potentials (ERP), which permit the recording of electrophysiological activity among brain cells and other grouped components of the brain; magnetophysiological methods, which record the electrical and magnetic properties of neurons in the brain (MEG); and func-

Neuroscience literature can help guide defense counsel concerning how researchers have developed models to explain the phenomena of memory and learning.

tional imaging methods that include PET (positron emission tomography, using radioactive tracers to observe metabolic processes) and fMRI (functional magnetic resonance imaging, which in basic terms helps measure brain neuronal activity by assessing evidence of blood flow).

Neuroscientists and forensic mental health experts have explained to judges, lawyers, and juries for some time that until the advent of imaging and related technologies, it has been highly difficult to study both brain anatomy and brain function in living human beings. Before relatively recent technological and scientific developments, it had only been through brain injury and surgery that the function of areas of a living human being's brain could be assessed. Observed injuries to the brain that resulted in an inability for an individual to perform specific functions permitted inferences to be drawn about how certain areas of the brain relate to functions like movement, speaking, facial and other recognition, reading, memory, and the like. Over a period of time, researchers were able to aggregate data to start generalizing about what was being observed through the "lesion" (here meaning an area of brain damage) method. That method correlated lesions to unusual behaviors or to impairments. It permitted scientists and medical professionals to hypothesize about what areas of the brain were involved in enabling or regulating given human functions.

As research methodologies and research tools evolved, researchers used electrical stimulation of the brain and observed electrical activity in the brain. They were able to begin to research certain phenomena in detail. All of these helped associate areas of the brain — not necessarily just one area — with par-

ticular movements, behaviors, capacities, and functions.

In the 1980s and 1990s, brain imaging studies and the evolution of computer (information processing) technologies expanded on what x-rays and basic EEG research could do. Various techniques like computerized axial tomography (CAT) and positron emission tomography (PET) evolved to allow

greater comprehension of brain anatomy (CAT) and brain function (PET).¹⁹

As technologies evolved, both through use of experiments and observational research in various settings, a number of further techniques developed to allow researchers to use the following: the measurement of electrical activity in the brain, neural metabolism, the implications of variations in blood flow and blood oxygenation, and neurovascular changes. Both structural and functional studies have been conducted over time in a variety of ways with different populations, using techniques that are familiar to lawyers who have at least heard of sMRI (structural magnetic resonance imaging), and fMRI (functional magnetic resonance imaging). Technologies, including computer technology, evolved in such a way as to allow visual representations of brain structures and brain activity that could be used in research and clinics and in the courtroom. This latter area is of great concern to those fearing "imaging overuse" in courts. There are concerns that while the illustrations of areas of brain dysfunction are attractive to lawyers, they can be misleading and suggestive of greater precision in the technology than actually exists. Awareness of cautionary notes surrounding the use of neuroscience in court is essential.

Cautionary Notes on Neuroscience in Court

Several the cautionary notes sounded about the presentation of neuroscience evidence in court tend to focus on one of two themes. The first caution is that certain of the inferences sought to be drawn from the use of structural or functional imaging studies on a particular person are speculative and are not sufficiently valid or reliable to be relied on in court. The notion

is that there has been insufficient norming and validation of certain neuroscience techniques for experts to testify about them in court.

The second often-heard cautionary note is that certain approaches to neuroscientific explanation of brain function are deterministic and are not compatible with a basic assumption in the law that each actor has both legally recognized autonomy and individual responsibility. This warning tends to be sounded by those skeptical about the use of neuroscience-based techniques and imaging studies to help explain someone's conduct or decision-making at an earlier point in time. These cautionary notes are not likely as applicable to competence assessments as to other aspects of behavioral analysis in the court system.²⁰

One of the experts called by government counsel to counter neuroimaging evidence offered by the defense is Dr. Helen Mayberg. She has explained at least some of the basis for her concerns:

Neuroimaging technologies, in particular, have begun to reveal the complex anatomical, physiological, biochemical, genetic, and molecular organizational *structure* of the organ at the center of [the central nervous system]: the human brain. More recently, neuroimaging technologies have enabled the investigation of normal brain *function* and are being used to gain important new insights into the mechanisms behind many neuropsychiatric disorders. This research has implications for psychiatric diagnosis, treatment, and risk assessment. However, with some exceptions, neuroimaging is still a research tool — not ready for use in clinical psychiatry.²¹

Dr. Geoffrey Aguirre, another scientist who has assisted the government in responding to defense evidence, has written that notwithstanding the enormous effort that has gone into refining, validating, and expanding the analytical and inferential tools of neuroimaging, "critics of neuroimaging can point accurately to many studies that make breathless — and arguably baseless — claims about the brain and behavior."²² Nonetheless, Dr. Aguirre (an active neuroscientist) makes it clear that in his view there are some areas in which neuroscience-based evidence and information stand on well-founded research.²³

A counterpoint to overly "conserva-

tive” views has been offered by Dr. Martha Farah, the Director of the University of Pennsylvania’s Center for Neuroscience and Society. Dr. Farah, both a colleague of Dr. Aguirre’s and a widely published scholar, has written that “[n]one of the criticisms reviewed [in a series of articles discussing the interpretation of neuroimaging] constitute reasons to reject or even drastically curtail the use of neuroimaging. Rather, they remind us that neuroimaging, like other scientific methods, is subject to various specific errors that the self-correcting process of science continues to address.”²⁴

These views from knowledgeable scientists may explain why another commentator reflecting on the varying reception that neuroscience has received in courts titled one of her writings “Flickering Admissibility: Neuroimaging Evidence in the U.S. Courts.”²⁵ The title says nothing unusual to experienced lawyers: judges have varied in their responses to neuroscience evidence.

Neuroscience Where Competence Is in Question

How can neuroscience or reference to neuroscientific literature assist the defense lawyer in analyzing the issue of competence to stand trial? Consider an example in which forensic assessment professionals explain that there appear to be impairments in the accused’s long- and short-term memory “systems.” In addition, counsel has observed that the defendant has difficulty retaining information from one meeting to the next and retrieving historical information important to the preparation of the case.

Symptom or performance validity questions may exist. Also, there may be questions about the potential linkage of the observations to a more pervasive problem. While forensic psychologists and neuropsychologists have psychological and forensic assessment models for understanding memory and tools for “testing” memory and the “faking bad” (intentionally faking a poor memory) of memory deficits, their approaches tend not to be always informed by the study of the neurobiology, neuroanatomy, and the neurochemistry of memory. Several neuroscience studies of the brain function associated with memory include imaging animal and human brains to allow research on the regions of the brain involved in (1) memory and learning, (2) storage of certain categories of information, and (3) the processes of coding information and retrieving it. The neuroscience-based models for the understanding of learning and memory are linked to

brain-focused research. Thus, they are different from the cognitive and social psychology models known to lawyers from having been exposed to the basics of perception and memory in addressing eyewitness identification issues. Consultation of literature from the neurosciences can help guide the lawyer on how neuroscientists have learned about and developed models to explain the phenomena of memory and learning.²⁶

The notion of neuroscience as providing useful information for lawyers in criminal cases is supported by a 2018 article by attorney John Meixner,²⁷ who concludes that “neuroscience can play a two-fold role in competency evaluations: (1) support for behavioral conclusions, and (2) verification of the validity of the behavioral indicators used.”²⁸ Along the way, Meixner explains that neuroscience methods can be brought to bear in addressing matters like the relationship between “individual brain injury and malingering. . . .”²⁹ And while the AAPL’s 2007 competence assessment guidelines do not identify imaging as specifically helpful in determining the “genuineness” of a competence issue, the *Guidelines* have been used during the courtroom examination of expert witnesses to point out the utility of imaging studies as part of a spectrum of competence-related data.

Some works on the assessment of malingering and deception, for example the 2018 Rogers and Bender *Clinical Assessment of Malingering and Deception* (4th edition), contain no specific focus on the advisability of using imaging techniques to further investigate the genuineness of deficits and disabilities. Other works, however, underscore the utility of pairing neuropsychological assessment and brain imaging studies as tools to investigate particular behaviors or symptoms that help examine conditions like dementia, pseudodementia, and forms of frontal lobe impairments.³⁰

Meixner also makes the point that there is “the potential for neuroscience to provide data that might lead to the conclusion that certain classes of individuals are more prone to being incompetent than others.”³¹ In discussing this and other related matters, he notes that the U.S. Supreme Court has used information about group characteristics — for example, information presented to it about the characteristics of the juvenile brain — that lend themselves to certain inferences about the group. As Meixner puts it, the development of information about specified groups will help define the group’s vulnerabilities. He notes: “Neuroscience data implying that certain

groups [juveniles, for example] are more vulnerable to falling below the competency threshold might inform examiners or courts making competency determinations about a single person.”³² The point made is significant. There are categories of persons — for example persons in upper age groups whose group characteristics have been subject to research on matters including language comprehension, situational awareness, decision-making and information processing — that are closely related to matters of interest in competence inquiries. Effective lawyering with a client who is in one of these age groups requires having at least some familiarity with the pertinent neuroscience research.

Court Decisions That Discuss Imaging and Competence

There are reported decisions that discuss the use of neuroscience evidence either to prompt inquiries into an individual’s competence or to demonstrate that the accused is incompetent. For example, *United States v. Duncan* (a Ninth Circuit capital case) included a structural MRI study and a metabolic brain study (PET) of the accused that showed unusual brain structure and activity.³³ The Ninth Circuit offered little detail for the conclusion that the neuroscience-related studies were significant. However, the studies were explained by the court as part of the reasoning for remanding the case for decisions on whether the accused had “competently” waived his right to appeal.

In *United States v. Dreyer*, the Ninth Circuit relied in part upon imaging studies indicative of “extensive frontal lobe damage” consistent with certain findings in neuropsychological assessment that examiners explained were correlated to behaviors and impairments reported in a competence assessment. “Given the expert opinions that supported defense counsel’s representation that Dreyer was unable to assist in his defense due to his medical condition, the record creates a genuine doubt as to Dreyer’s competency even in the absence of observable courtroom antics,” the court concluded.³⁴ The involvement of imaging was among the findings the court noted.

Several other rulings, many cited by Meixner, address competency determinations that include at least some discussion of brain metabolism testing or the use and presentation of brain imaging studies. Notable among these, in part because of the thoroughness of the discussion from a magistrate judge, is *United States v. Kasim*.³⁵ The competence-related ruling in *Kasim* is unique for its listing of a directo-

ry of medical terminology and assessment definitions pertinent to the overall analysis as well as for its discussion of varying opinions related to an individual's functioning, including possible symptom invalidity. *Kasim* is discussed in passing in the section on neuroimaging in the 2018 APA *Textbook of Forensic Psychiatry*.³⁶ While not underscored with the cautionary note that it may be due, the 2018 APA publication also cites *United States v. Gigante*,³⁷ a case involving a competence inquiry in which there was testimony about the results of PET-related studies of the client. The case caused some level of embarrassment to the forensic mental health community when, after a lengthy set of competence assessments and related evidentiary hearings, the accused eventually entered a guilty plea to an obstruction of justice-related offense for having exaggerated his disabilities and incompetence.

Conclusion

A quick, unscientific survey of university websites that contain the phrase “neuroscience and law” or the word “neuroscience” reveals that in a relatively short period of time, various schools and faculty members have succeeded in helping to pull the study of neuroscience and law into the halls of more than 60 colleges and universities, many of them among the best known in the United States. Ironically, while scholars, researchers and academics are likely promoting neuroscience and its future, a number of neuroscientists underscore their concern that neuroscience should not be pushed into the courts too rapidly.

When it comes to the assessment of a human being's situational awareness, ability to communicate, decision-making ability, problem-solving ability and relationship to the legal system, neuroscience literature can offer the legal system and its assessment of the competence to stand trial (1) information about the development and “operation” of the human brain and (2) data on what behaviors and deficits can be correlated to brain dysfunction. It announces neuroscientists as valuable teaching experts on brain function and on how the understanding of brain function is evolving.

Regarding the use of neuroscience in the courtroom, neuroscientists who define themselves as conservative on the issue want to avoid promising too much. Forensic mental health professions, however, are used to their endeavors being central to judicial decision-making on the subject of competence, regardless to some degree of the limitations of the testing and interview-based forensic mental

health assessment process. What sources of competence data should judges and lawyers consider? As demonstrated here, the topic is unevenly discussed. Some literature and practice guidelines point directly to the utility of including neuroscience techniques in a competence assessment, while elsewhere the topic is left untouched and unaddressed.

In its decisions on competence to stand trial, most notably in *Cooper v. Oklahoma*, the U.S. Supreme Court underscored the importance that should be given to competence assessment and the steps that should be taken to recognize the inexactness of the courts' competence assessment and adjudication process.³⁸ Careful lawyering of a competence question requires that lawyers define the spectrum of information that will be brought to bear and will be presented in a given case. Some of the judicial decisions cited in this article demonstrate the admirable extent to which certain judges, lawyers, and mental health professionals in certain cases have gone to describe and then ascertain a person's competence. In contemporary higher-end competence inquiries and adjudications, it is clear that neuroscience has been a consideration.

The neuroscience literature underscores how limited and limiting the “drive by” competence evaluation — consisting of a mental health expert's one shot visit with a client and the administration of “some tests” — can be. Familiarity with neuroscience literature will at least inspire lawyers to ask experts about assessment approaches or inquiries that might be undertaken.³⁹

© 2019, National Association of Criminal Defense Lawyers. All rights reserved.

Editor's Note:

The author conducted part of the research on this article when he was a Visiting Scholar at the University of Pennsylvania's Center for Neuroscience and Society in May 2019. He thanks Dr. Martha Farah, Director of the Center.

Notes

1. While certainly not without limitations, the writer references two of his own publications focused on these “lawyering” tasks: John Philipsborn, *The Role and Duties of a Lawyer in Addressing Competence to Stand Trial Where the Questions Are Focused on Client Communication and Capacity to Assist*, ABA CRIMINAL JUSTICE 34-39 (Fall 2017); John Philipsborn, *Competent on Competence: Understanding the Duties and Approaches to Effectively Address a*

Client's Incompetence to Stand Trial, THE CHAMPION 18-25 (January 2018). Other lawyers have weighted in productively. Two dated but useful works merit review: Gerald Bennett, *A Guided Tour Through Selected ABA Standards Related to Incompetence to Stand Trial*, 53 GEO. WASH. L. REV. 375 (1985) and Norma Schrock, *Defense Counsel's Role in Determining Competence to Stand Trial*, 9 GEO. J. LEGAL ETHICS 639-664 (1996).

2. Examples include the extensive order dismissing the murder indictment and entering findings of fact on the accused's incompetence in *State v. Mau*, Circuit Court Order Sept. 11, 2018, Case No. 1PC061001393; see also *United States v. Merriweather*, 921 F. Supp. 2d 1265 (N.D. Ala. 2013); *United States v. Kasim*, 2008 U.S. Dist. LEXIS 89137 (N.D. Ind. 2008); *United States v. Duhon*, 104 F. Supp. 2d 663 (2000). These are examples of trial court rulings that detail the evidence, including the array of lay and expert witnesses called to address competence issues. Some others are noted below.

3. PATRICIA ZAPF & RONALD ROESCH, *EVALUATION OF COMPETENCE TO STAND TRIAL* 3 (2009).

4. AMERICAN PSYCHIATRIC ASS'N TEXTBOOK OF FORENSIC PSYCHIATRY 96 (Liza Gold & Richard Frierson eds., 3d ed. 2018).

5. The AAPL Practice Guidelines for the Forensic Psychiatric Evaluation of Competence to Stand Trial are available at www.aapl.org and at 35 J. AM. ACAD. PSYCHIATRY & L. (Supplement) (2007). References to imaging are found at S28, S48, and S52; 2018 *Practice Resource for the Forensic Psychiatric Evaluation of Competence to Stand Trial*, 46 JAAPL 373 (2018).

6. Jennifer Moye, et al., *Assessment of Capacity in an Aging Society*, 68 AM. PSYCHOL. 158-171 (2013); Patricia Ambrosi, *The Role of Neuroimaging in the Aging Brain*, 7 J. NEUROLOGY & STROKE (2017).

7. Michael Perlin & Alison Lynch, *My Brain Is So Wired: Neuroimaging's Role in Competency Cases Involving Persons with Mental Disabilities*, 27 B.U. PUB. INST. L.J. 73-98, 75 (2018).

8. *Id.* at 97.

9. *Id.* at 98.

10. *Indiana v. Edwards*, 554 U.S. 164, 170-71 (2008), relying on the so-called *Dusky/Drope* test, *Dusky v. United States*, 362 U.S. 402 (1960) (*per curiam*) and *Drope v. Missouri*, 420 U.S. 162 (1975).

11. *Godinez v. Moran*, 509 U.S. 389, 392-94 (1993); *Cooper v. Oklahoma*, 517 U.S. 348 (1996).

12. THOMAS GRISSO, *COMPETENCE TO STAND TRIAL EVALUATIONS: JUST THE BASICS* (2014).

13. *Id.* at 17-18.

14. See, for example, the California

Supreme Court's decision in *People v. Buenrostro*, 6 Cal.5th 367, 390 (Cal. 2018): "[T]he *Dusky* standard does not require a specific medical diagnosis drawn from the current version of the [DSM]. . . ."

15. David Faigman, et al., *Law and Neuroscience Recommendations Submitted to the President's Bioethics Commission*, 1 J.L. & BIOSCIENCES 224 (2014).

16. *Id.* at 225.

17. *Id.*

18. JAMIE WARD, *THE STUDENT'S GUIDE TO COGNITIVE NEUROSCIENCE* (3d ed.) (2015).

19. See generally MARIE BANICH & REBECCA COMPTON, *COGNITIVE NEUROSCIENCE* (4th ed.) (2018); Jamie Ward, *supra* note 18.

20. The writer notes that thanks to his involvement with the University of Pennsylvania's Center for Neuroscience and Society and with other researchers and experts in the neurosciences, he has had the opportunity to confer or otherwise communicate with a number of researchers and clinicians who are familiar with and have used neuroscience-associated tools, including neuroimaging. The phrase "not ready for prime time" often comes up when aspects of neuroscience and law are discussed, even from researchers whose relative prominence has been achieved through their advocacy for both the use and promise of neuroscience. Even the "neuroscience and law skeptics" acknowledge that there are certain areas in which the use of neuroscience techniques, including neuroimaging, has developed sufficiently that it is relied upon by researchers and clinicians alike. What some of the critics of neuroscience in court seem to overlook about the discussion of evolving technologies in litigation is that the legal system is not unacquainted with the introduction of works in process in court. In that sense, neuroscience is by no means an outlier.

21. Helen Mayberg, *Neuroimaging and Psychiatry: The Long Road from Bench to Bedside*, 44 HASTINGS CENTER REP. S31-S36, at S31 (2014) (emphasis in original).

22. Geoffrey Aguirre, *Functional Neuroimaging: Technical, Logical, and Social Perspectives*, 45 HASTINGS SPECIAL REP. S8-S18, at S16 (2014). Dr. Aguirre is Associate Director of the Center for Neuroscience and Society at the University of Pennsylvania, and he graciously has met with the writer to discuss neuroscience and the law.

23. See note 22, *supra*.

24. Martha Farah, *Brain Images, Babies, and Bathwater: Critiquing Critiques of Functional Neuroimaging*, 45 HASTINGS CENTER SPECIAL REP. 2, S19-S30, at S28 (2014).

25. Jane Moriarty, *Flickering*

Admissibility: Neuroimaging Evidence in the U.S. Courts, 26 BEHAV. SCI. LAW 36 (2008).

26. MARIE BANICH & REBECCA COMPTON, *COGNITIVE NEUROSCIENCE* (4th ed.) (2018). See Chapter 9, *Memory and Learning* and the subsection *Brain Systems for Different Stages of Memory*.

27. John Meixner, *Neuroscience and Mental Competency: Current Uses and Future Potential*, 81 ALBANY L. REV. 995-1026 (2017/2018).

28. *Id.* at 1025.

29. *Id.* at 1022.

30. See, for example, Jared Tanner et al., *Integrating Neuropsychology and Brain Imaging for a Referral of Possible Pseudodementia: A Case Report*, 29 CLIN. NEUROPSYCH. 272-292 (2015). See also Ariane Dufour, *Contribution of Functional Neuroimaging and Neuropsychological Evaluation to Cognitive Diagnosis in Elderly Patients Assessed in a Memory Clinic*, 13 J. ALZHEIMER'S ASS'N, Issue 7, Supplement at 1394 (2017).

31. Meixner, *supra* note 27, at 1022.

32. *Id.* at 1023.

33. *United States v. Duncan*, 643 F.3d 1242, 1249-50 (9th Cir. 2011).

34. *United States v. Dreyer*, 705 F.3d 951, 965-66 (9th Cir. 2013).

35. *United States v. Kasim*, 2008 U.S. Dist. LEXIS 89137 (N.D. Ind. 2008).

36. AMERICAN PSYCHIATRIC ASS'N TEXTBOOK OF FORENSIC PSYCHIATRY 96, 106 (Liza Gold & Richard Frierson eds., 3d ed. 2018).

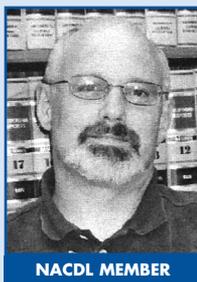
37. *United States v. Gigante*, 982 F. Supp. 140 (E.D.N.Y. 1997).

38. *Cooper v. Oklahoma*, 517 U.S. 348 (1996).

39. See Nathan Kolla & Jonathan Brodie, *Application of Neuroimaging to Competence to Stand Trial and Insanity in NEUROIMAGING IN FORENSIC PSYCHIATRY* (Joseph R. Simpson ed. 2012). ■

About the Author

A criminal defense lawyer for more than 40 years, John Philipsborn has often litigated, written about, and lectured on lawyers' approaches to addressing competence to stand trial.



John Philipsborn, M.Ed., JD, MAS

Law Offices of John T. Philipsborn
San Francisco, California
415-771-3801

EMAIL jphilipsbo@aol.com