

**Imaging Madness: Schizophrenia, Brain Images, and Scientific Communication in  
Psychiatry's Biological Revolution**

by

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Bachelor of Philosophy in History and Philosophy of Science, University of Pittsburgh, 2024

Submitted to the Graduate Faculty of the  
Dietrich School of Arts and Sciences in partial fulfillment  
of the requirements for the degree of  
Bachelor of Philosophy

University of Pittsburgh

2024

UNIVERSITY OF PITTSBURGH  
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University of Pittsburgh, 2024

In the late twentieth century, a period known as the biological revolution in psychiatry, scientific applications to the field expanded rapidly and mental illnesses were increasingly understood as biological entities rather than moral shortcomings or conflicts of the unconscious. Concurrently, both scientific communication and public opinion about mental illness were shifting. My thesis explores this shift with respect to schizophrenia, which has an especially harmful reputation in the media, and places emphasis on the role of neuroimaging figures in shaping both scientific communication and public perception. I examine what information about schizophrenia was being communicated both between scientists and to the general public before and throughout the biological revolution. I contextualize my analysis with a discussion of visual culture and scientific objectivism, and describe how neuroimaging technology fits into these paradigms. Next, I offer a history of visual representations in psychiatry, demonstrating that interest in capturing images of schizophrenia predates the advent of neuroimages. Finally, I evaluate media sources from throughout the biological revolution that reference schizophrenia and neuroimaging technology to show a transformation in what information was communicated to the public. By investigating the contributions of neuroimaging technology in maintaining a biologically-oriented public perspective of schizophrenia throughout the biological revolution, I intend to comment on the nature of scientific communication and its role in creating and upholding public perceptions and social stigma.

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## Acknowledgements

During the process of completing my thesis, from the earliest stages of planning to the final edits and defense preparations, I've relied on the involvement and support of numerous individuals. Jon Fuller, thank you for serving on my thesis committee and bringing your expertise of medical history and philosophy to my defense. I gained so much from your questions and was probed to think about the core tensions that I've addressed in my thesis differently. Hanne Andersen, I deeply appreciate your willingness to ignore the time difference and attend my defense as my external examiner all the way from Copenhagen. Your remarks were incredibly thoughtful and will undoubtedly inform my future scholarship.

I am especially indebted to my thesis advisors, Michael Dietrich and Tomas Matza. Mike, your expertise in historical research methods was invaluable as I took this first step into HPS scholarship. Our weekly meetings in your office transformed my scattered ideas about twentieth century psychiatry and the pitfalls of neuroimaging into a cohesive argument and eventual manuscript. Dr. Matza, all of this began with you. Taking CPMH was perhaps the most important decision I've made in my time as an undergrad. Without your thoughtful lectures and carefully selected readings, I may not have been introduced to the world of mental health scholarship. Your mentorship has not only informed my work but solidified my trajectory as an aspiring physician.

Friendship is too weak a word to describe my connection to Catherine Cavanaugh. Whether you were helping to brainstorm ideas for this thesis, gracing me with stories someday destined for the stage, or entrusting me with your various writings (among the highest honors you could bestow), it is a privilege to know you. Thank you for attending my defense, and for all of your contributions to my project that led to its success. And for the postcards – they are rad!

It would take a poet or a painter to properly capture what Sydney Gregg has done to support me this past year; I am neither, but I'll try anyway. Sydney, your careful eye while reading my drafts is second only to your patience. I cannot thank you enough for the nuanced suggestions I asked for and the tireless encouragement I needed. You were there for me always, and more than anything else, it was the love and support I received from you that allowed me to complete this thesis. You are evidence of how impactful it can be to combine intelligence, dedication, and kindness, and I am forever grateful for your involvement in both this project and my life.

I am indebted to my family for never leaving my corner. Thank you, Mum and Dad, for working endlessly to make higher education a possibility for my siblings and I while still finding time to show us you care in unique and significant ways. Thank you, Sarah and Ben, for your endless interest in my ambitions while you both pursue your own. Thank you, Nana, for your unconditional love and for teaching me how to prepare a proper cup of tea (which, of course, has fueled so many writing sessions). And thank you, Mammy, for believing in me during moments when my own belief has faltered.

Finally, I want to thank the individuals I've met during my time working as a student behavioral associate at Western Psychiatric Hospital. The staff of doctors, nurses, therapists, PCTs, and SBAs taught me so many invaluable lessons about providing devoted and humane care to individuals living with psychiatric illness. And of course, I must thank the patients whom this thesis is inspired by and dedicated to. It was a privilege to hear your stories and I cannot express the full extent of my gratitude for being trusted with them. I was transformed by the moments of resilience and humanity I've witnessed and will carry with me the lessons of our encounters for the rest of my life.

## 1.0 Introduction

*The most shocking thing about mental illness is how little we understand it.*

National Alliance on Mental Illness<sup>1</sup>

Despite being a powerful tool for knowledge acquisition, science is largely inaccessible to a general audience. The use of scientific figures can bridge this disconnect, representing complicated relationships in ways that are concise, consumable, and visually appealing. When data is represented in figures, however, it is possible that information will be lost, understood with less nuance, or misrepresented. These risks exist in the field of psychiatry in light of the rise of neuroimaging technology, such as functional magnetic resonance imaging (fMRI) and positron emission tomography (PET), which display activity and phenomena in the brain. Joseph Dumit explores how PET scans of “normal” brains are contrasted with “diseased” brains (“schizophrenia”, “cocaine”, “depression”) as well as how they are depicted in the media and perceived by the public. Dumit posits that, given their palatability and their prevalence in pop culture, oversimplified brain scan figures can lead to misinformed opinions of mental illness and neuroscience.<sup>2</sup>

Of course, psychiatry was not always equipped with these sophisticated tools; the capacity to visualize the brains of individuals is a relatively recent development that was established in the

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<sup>1</sup> Promotional posters for NAMI, found in Wahl, Otto F. 2003. *Media Madness: Public Images of Mental Illness*. New Brunswick, New Jersey: Rutgers University Press.

<sup>2</sup> Dumit, Joseph. 2004. *Picturing Personhood: Brain Scans and Biomedical Identity* (Princeton, N.J.: Princeton University Press).

field alongside and in support of a larger movement known as the biological revolution in psychiatry. Prior to the advent of scientific advancements such as pharmaceuticals and neuroimaging technology, working understandings of psychiatric illness were markedly different. With little understanding of the causal basis of these conditions, alternative explanations were sought; these ranged from viewing mental illnesses as manifestations of divine punishment to the belief that unresolved conflicts of the unconscious arising at different life stages can result in psychological distress.<sup>3</sup> Such explanations often cast blame on the individual as a sinner, emotionally maladjusted, or weak-willed. With continued scientific development, more was being uncovered about the underlying physiological differences in those with mental illness, and the field gradually relied less on previous models of mental illness.<sup>4</sup> In the late twentieth century, scientific applications to the field expanded rapidly and mental illnesses were increasingly understood as biological disorders.

Concurrently, both scientific and public discourses of mental illness were shifting. In my thesis, I explore the nature of this shift: how was information about schizophrenia communicated among scientists and to the public from the late nineteenth to the early twenty first century? Of special interest is the role of neuroimaging figures: I investigate the contributions of neuroimaging technology in creating and maintaining a biologically-oriented perspective of schizophrenia and other mental illnesses in both the scientific community and in popular culture. I will consider historically significant intersections between the development of neuroimaging technology and

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<sup>3</sup> Andreasen, Nancy C. 1985. *The Broken Brain: The Biological Revolution in Psychiatry*. New York: Perennial Library.

<sup>4</sup> Andreasen, Nancy C. 1985. *The Broken Brain: The Biological Revolution in Psychiatry*.

cultural views of schizophrenia, as well as how these views impact individuals living with the disorder.

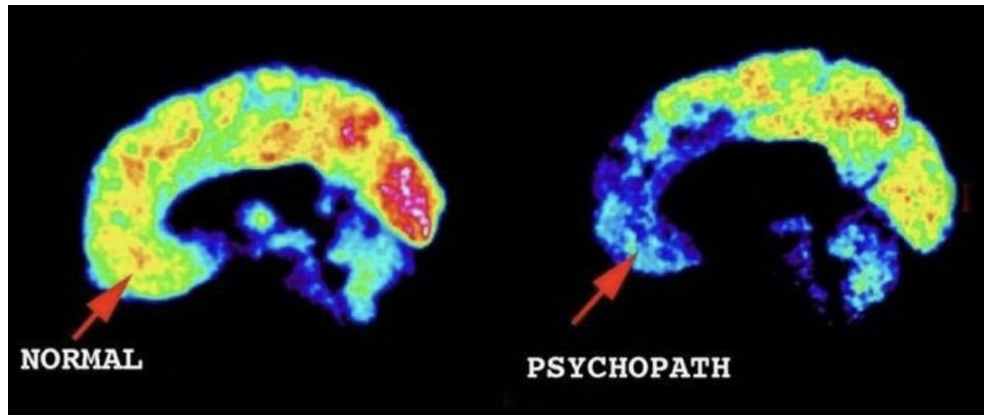
In the first chapter, I begin by contextualizing my analysis with a discussion of visual culture and scientific authority, which I argue are two essential components in granting brain scans their societal prominence. In the second chapter, I offer a history of scientific communication about schizophrenia that spans the late nineteenth century to the modern era, focusing primarily on how schizophrenia has been visualized in professional contexts and on the emergence of neuroimaging technology in the fields of psychology and neuroscience. In the third chapter, I examine media sources from both before and throughout the biological revolution that discuss schizophrenia to show a change in what information was transmitted to the public. Here, I will counter a widely-held belief that the biomedicalization of psychiatric disorders significantly alleviated social stigma. Through several examples across media platforms, I will demonstrate that despite modest improvements in popular portrayals of schizophrenia, several harmful beliefs persisted throughout, and were even created by, the events of the biological revolution.

## 2.0 Neuroimages, Visual Culture, and Scientific Authority

*[I shall not] discuss scientific method, but rather the methods of scientists. We proceed by common sense and ingenuity. There are no rules, only the principles of integrity and objectivity, with a complete rejection of all authority except that of fact.*

Joel H. Hildebrand, *Science in the Making*

The popularization of brain scans was swift and widespread. Neuroimaging technology emerged at the end of the twentieth century and soon became a hot-button issue discussed by both experts and lay persons. Before examining the effects of neuroimaging technology on scientific communication and popular culture, it is crucial to first understand why these effects took hold. It is not necessary that a new medical technology will prevail in scientific circles; it is especially untrue that a new technology will permeate into public discourse. The novelty of neuroimages cannot alone account for their rapid popularization and circulation. The aim of this chapter is to describe which aspects of these figures facilitate the virality observed in both scientific and mainstream society.



**Figure 1: Normal vs psychopath brain scans, found on social media**

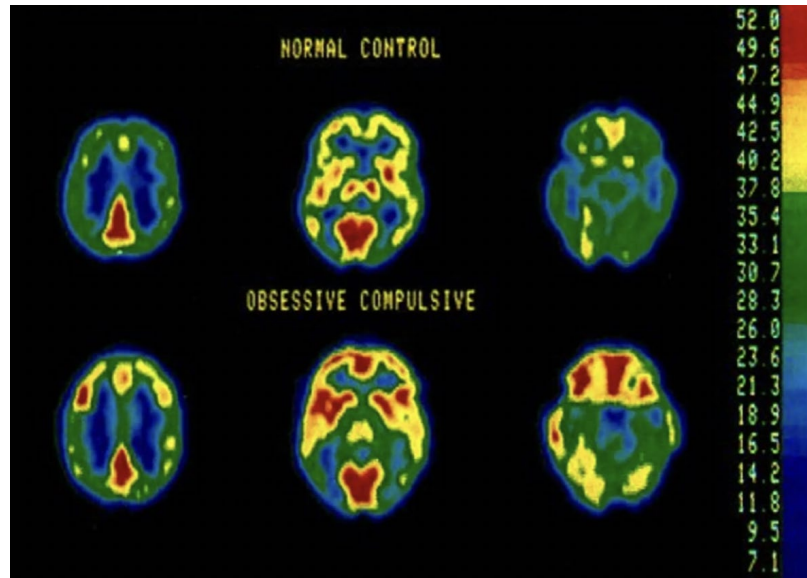
Pictured above is a pair of brain scans found on the social media platform X (previously known as Twitter) included in a post from 2019 (Figure 1).<sup>5</sup> The scan purports to reveal a difference between a “normal” person and a “psychopath,” revealing a large region of blue in the front of the brain in the psychopathic individual that replaces the green of a normal individual. Without any indication of how the data was collected, what color differences signify, or how it connects to clinical diagnostic criteria, this brain scan nevertheless found its way into mainstream media. Similarly, a series of brain scans from an article published on the Yale School of Medicine website show neural correlates of “obsessive-compulsive” brains as compared to normal controls (Figure 2).<sup>6</sup> With its scientifically informed audience in mind, the article’s author describes that warmer colors correlate to higher activity and identifies specific brain regions in which significant differences were found.

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<sup>5</sup> Wilkinson, Andrew. 2019. X. April 19, 2019. <https://twitter.com/awilkinson/status/1117482882732384263>.

<sup>6</sup> Pittenger, Christopher. 2014. “What Does an OCD Brain Look Like?” *Medicine.yale.edu*. October 10, 2014. <https://medicine.yale.edu/news-article/what-does-an-ocd-brain-look-like/>.





**Figure 2: Normal control versus obsessive compulsive brains, found on Yale Medical School website**

Two characteristics distinguish these brain scans from other image types. First, both sets of scans present a colorful display of the brains in which differences can be *seen* by the viewer, even if not fully understood. Second, these scans have clearly originated as products of scientific research. This means that brain scans are simultaneously *visual* and *scientific*. In this chapter I will argue that the epistemic authority associated with these qualities can explain the prevalence of brain scans in society.

I begin the chapter with a discussion of the visual component. I will describe how knowledge has been historically associated with what can be seen and describe how this has been applied to a certain type of image called a technical reproduction. I'll then transition to scientific authority, describing how things associated with science often possess a perceived quality of "objectivity" in the public eye, whether or not this is true. I will conclude by considering each of these components in relation to neuroimaging technology. At this point, I will discuss the

subjective process of creating neuroimaging figures and explore the implications of granting undue authority to brain scans.

## 2.1 Visual Culture, Technical Reproduction, and Realism

Visual culture is an emerging field which aims to account for the social and cultural practices that surround vision and visual media. It is difficult to narrowly define the field's scope, given not only the lack of consensus among scholars but also that nearly everything has, to some extent, a visual component.<sup>7</sup> In my discussion, I will maintain a moderately broad definition of visual culture which includes any practice or media form which meaningfully relies on sight and visual display.

Historically, communication in Western societies had been dominated by auditory, rather than visual, forms of communication. Matthew Rampley details that stories were told, histories were recollected, and cultural traditions were passed through word of mouth; the West had been an "oral society" in many ways.<sup>8</sup> While early forms of written and visual communication existed, production was an expensive and painstaking process. Compounded by low levels of literacy, the circulation of visual media forms was sparse.<sup>9</sup> Starting in the fifteenth century, however, developments in technology drove down production costs and consequently increased mass production of visual media forms such as lithographs and photographs. Rampley maintains that, as technologies which produce and distribute visual media became more accessible, visual

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<sup>7</sup> Rampley, Matthew. 2005. *Exploring Visual Culture*. Edinburgh University Press, 1.

<sup>8</sup> Rampley, *Exploring Visual Culture*, 14-15.

<sup>9</sup> Rampley, *Exploring Visual Culture*, 15.

communication became more abundant and the West was transformed into a culture dominated by vision.<sup>10</sup>

Ramplsey's history of visual preeminence is substantiated by developments in epistemological philosophy. From Descartes' dualism and Locke's mentalism came the project of demarcating the external world from the internal mind; as Chris Jenks suggests, sight was the primary sense by which this separation was created and maintained.<sup>11</sup> Empiricism, an epistemological movement rooted in sensory experience as a means of producing knowledge, was established from this reliance on sight.<sup>12</sup> In essence, seeing became knowing.

Given this trend towards the visual, underpinned by both technological and philosophical development, that images and other visualizations became potent rhetorical devices in the West should be unsurprising. Art and other images have spurred discourse and effected change in societies since antiquity; far from being exclusively concerned with accurate depictions of the world, oftentimes artists and producers include a persuasive aspect to the images they create and distribute.<sup>13</sup> One needn't look further than the newspaper: advertisements persuade individuals to consume certain products and services, political cartoons take a stance on certain politicians or voting issues, photographs taken from the scene of a tragic accident supplement an article and elicit powerful negative emotions in the viewer. In Western culture, visual rhetoric is profuse.

In some cases, the line between persuasive and non-persuasive images is blurred. Malcolm Barnard has argued convincingly that images often persuade even when the explicit purpose is to inform. Using tobacco advertisements as illustration, Barnard cautions his reader of images which

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<sup>10</sup> Ramplsey, *Exploring Visual Culture*, 15.

<sup>11</sup> Jenks, Chris. 1995. *Visual Culture*. Routledge, 11-12.

<sup>12</sup> Jenks, Chris. 1995. *Visual Culture*, 11-12.

<sup>13</sup> Ramplsey, *Exploring Visual Culture*, 134.

have been claimed to exist for purely informative purposes with no persuasive investment.<sup>14</sup> Similarly, Rampley maintains that individuals communicate information to desirably change an aspect of someone's behavior, not merely for the sake of information transfer.<sup>15</sup>

Perhaps the most convincing counterexamples, in which images seem fundamentally non-persuasive, are technical reproductions. These are images which were produced technologically and closely recreate the original object(s); sometimes, technical reproductions can be produced in mass quantities and by a comparatively large percentage of the population.<sup>16</sup> While not limited to photographic technology, photographs are the most common form. As I'll argue later in the chapter, there is little to prevent technical reproductions from possessing the same persuasive qualities as other image types.

The misattribution is understandable, however. Technical reproductions have a unique capacity to capture reality as it truly appears, or at least approximate it with astounding accuracy. Once again, photography offers an important example: camera-caught images display a convincing representation of reality which usually avoids significant inaccuracy or distortion. In his chapter on visual culture and photographic history, Don Slater affirms the relationship between photography and reality:

The experience of photography, since its inception, has been fundamentally structured by the sense that it is a realist medium: its basic character has always been understood to be given by its precise mechanical and impersonal rendering of the appearance of objects.

This character links photography inextricably to modern vision, and in particular modern

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<sup>14</sup> Jenks, Chris. 1995. *Visual Culture*, 38.

<sup>15</sup> Rampley, *Exploring Visual Culture*, 137.

<sup>16</sup> Rampley, *Exploring Visual Culture*, 198-199.

vision as exemplified in science: vision is a vehicle of knowledge and truth (indeed the only one) in an empiricist culture.<sup>17</sup>

At first glance, it seems intuitive to consider such images as void of subjectivity and rhetoric. As Slater argues above, the photograph as a medium is rooted in realism; depictions are impersonal and possess a quality of truth akin to our own visual systems. A central aspect of realism as an artistic movement is its association with honesty, which fostered trust in science as a method of “objectively and factually” viewing the natural world in the public sphere.<sup>18</sup> This trust extends to technical reproductions, given how often the assumed primary purpose is to communicate information as it originally exists.<sup>19</sup> Technical reproductions therefore command authority as images of reality in its objective state.

There are subtle tensions between reality and realism, however. Neil Mulholland contests the assumption of primary purpose, arguing that “system[s] of representation [are] carefully constructed” and that we must examine technical reproductions within the context of the culture they arose from and are produced for.<sup>20</sup> Further, even images which accurately depict reality can elicit powerful and even motivating responses in their viewers:

The ‘reality factor’ of camera-based images can generate stronger physiological and psychological reactions than a painting might do. At the same time they provide a safety-net against the shock they themselves induce. A photograph representing a violent scene

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<sup>17</sup> Jenks, Chris. 1995. *Visual Culture*, 219-220.

<sup>18</sup> Rampley, *Exploring Visual Culture*, 117.

<sup>19</sup> Rampley, *Exploring Visual Culture*, 124.

<sup>20</sup> Rampley, *Exploring Visual Culture*, 124.

may cause us to be shocked, even to feel nauseated, but watching it ‘safely’ at a remove from the actual scene simultaneously ‘shields’ us from the shock... One effect is that images have to become ever more violent and/or spectacular to elicit a reaction...<sup>21</sup>

The passage from Ruth Pelzer offers two key points: first, that even realistic and truthful representations can conjure strong emotional reactions; second, that sometimes a certain reaction is desired. Implicit in the assertion that images must “become” more intense to create a certain response is an indication that those tasked with capturing and/or distributing these images have certain power over the intensity of the image as well as vested interest in how the viewer responds.

## **2.2 Objectivity and Scientific Authority**

In the discussion of visual culture, it was revealed that technical reproductions contain a quality of objectivity which affords these images a certain authority of truth. This authority is not limited to technical reproductions; objectivity is an important concept in philosophy of science and its relationship with truth is closely examined. In this section, I will survey this concept and explore its implications with respect to scientific communication.

Elisabeth Lloyd describes four distinct ways in which the word “objectivity” is contemporarily used: first, as detached and uninvested; second, as public and observable; third, as existing independently of ourselves; and fourth, as real in its existence.<sup>22</sup> While these definitions

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<sup>21</sup> Rampley, *Exploring Visual Culture*, 202-203.

<sup>22</sup> Lloyd, Elisabeth A. 1995. “Objectivity and the Double Standard for Feminist Epistemologies.” *Synthese* 104 (3): 351–81. <https://doi.org/10.1007/bf01064505>.

are separable, what unifies them is a common pursuit of truth: Each hint at the possibility of a reality which is unabated by bias or subjective opinion. Objectivity is known to be a hallmark of science, specifically *good science*. To practice contemporary science properly, the scientist must not be influenced by investment or emotional attachment to any one result and should be interested only in producing a result which reflects the true state of reality. This attitude towards the pursuit of science, in which results should be untampered by subjectivity, is embedded deep within the training process for scientists.<sup>23</sup> The capacity for objectivity in science is often thought to lie in its methodologies, and historically only the methodologies which exclude human prejudices or social context are capable of producing knowledge that is objective.<sup>24</sup>

Whether or not science should endorse a so-called “value-free ideal” is debated heavily in philosophy of science<sup>25</sup> but is beyond the scope of this thesis. However, it is worth considering the validity of the argument that science deals exclusively in “objective” methodologies. One strong objection is that it is impossible to eliminate the bias of human perspective when designing methods and experiments. Zuleyma Tang Halpin has asserted that, because science has historically been performed by affluent white men, the frame of reference for assessing normality and abnormality is inaccurate. The separation of the scientist from the research subjects, which is thought to be essential to objective methodologies, has been used to justify the examination of groups who exist outside of the categories of scientists; the results of these studies have often

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<sup>23</sup> Halpin, Zuleyma Tang. 1989. “Scientific Objectivity and the Concept of ‘the Other.’” *Women’s Studies International Forum* 12 (3): 285–94. [https://doi.org/10.1016/s0277-5395\(89\)80006-8](https://doi.org/10.1016/s0277-5395(89)80006-8).

<sup>24</sup> Cartwright, Nancy, and Eleonora Montuschi. (2024) 2014. *Philosophy of Social Science: A New Introduction*. New York: Oxford University Press.

<sup>25</sup> Douglas, Heather. 2000. “Inductive Risk and Values in Science.” *Philosophy of Science* 67 (4): 559–79. <https://doi.org/10.1086/392855>;

Betz, Gregor. 2013. “In Defense of the Value Free Ideal.” *European Journal for Philosophy of Science* 3 (2): 207–20. <https://doi.org/10.1007/s13194-012-0062-x>.

misleadingly affirmed social biases and opinions given the nature of the study design.<sup>26</sup> Halpin illustrates this point with a description of work performed by Paul Broca, a nineteenth century neuroscientist notorious for his meticulousness in the laboratory:

Studies were undertaken only to determine whether brain size is a reliable measure of intellectual ability among races and between sexes. The easiest way to make this determination was to compare the cranial capacity of two groups “known” to be intellectually superior (white males) with those of groups “known” to be intellectually inferior (non-white races and women). Not surprisingly, given this a priori bias, most craniometricians found significant differences in brain size between whites and non-whites, as well as between men and women. Coming full circle, they then used these differences as scientific proof for white male superiority.<sup>27</sup>

The passage illustrates the harrowing extent to which bias and subjectivity creep into science, even in experiments of the most renowned scientific investigators. Bias in science is not a concern left in the past, however; Halpin maintains that reference errors of this kind pervade well into the modern era of science.<sup>28</sup> Despite these concerns, science maintains strong influence on contemporary society. Various social and political issues, at both national and global scales, are in some way related to and dependent on scientific findings. Additionally, the overwhelming majority

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<sup>26</sup> Halpin, “Scientific Objectivity and the Concept of ‘the Other.’”

<sup>27</sup> Halpin, “Scientific Objectivity and the Concept of ‘the Other.’”

<sup>28</sup> Halpin, “Scientific Objectivity and the Concept of ‘the Other.’”



of individuals who learn about, discuss, and vote on these issues lack formal training in relevant fields.<sup>29</sup> It is therefore crucial to explore public perceptions of and engagement with science.

Popular theories reason that, through increased scientific literacy, a population becomes more accepting of science and its findings. Dominique Brossard and Matthew Nisbet reject this view, instead offering the term “low-information public” to describe the methods individuals in a society use to form opinions about issues relating to science.<sup>30</sup> Under this view, individuals have a tendency to gather “only as much information about a topic as they think is necessary to reach a decision,” and therefore rely on “the strong heuristic role played by value predispositions and media content” when faced with pressure to understand and weigh in on issues in science. Two central drives are identified in the shaping of general opinions of science, neither of which depend on the context or quality of the findings. This can be further integrated with a “deference to scientific authority” observed by the authors, in which the public learns to trust claims made by experts given that they are “indisputably linked to observable characteristics of the natural world.”<sup>31</sup> Halpin similarly proposes that the misperception of scientists as infallibly objective contributes to the general public’s “popular mythology and mystification of science”<sup>32</sup> Together, these claims suggest that public perception of science is divorced from, and yet assured by, the objectivism of its methodologies.

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<sup>29</sup> Takahashi, Bruno, and Edson C. Tandoc. 2015. “Media Sources, Credibility, and Perceptions of Science: Learning about How People Learn about Science.” *Public Understanding of Science* 25 (6): 674–90. <https://doi.org/10.1177/0963662515574986>.

<sup>30</sup> Brossard, D., and M. C. Nisbet. 2006. “Deference to Scientific Authority among a Low Information Public: Understanding U.S. Opinion on Agricultural Biotechnology.” *International Journal of Public Opinion Research* 19 (1): 24–52. <https://doi.org/10.1093/ijpor/edl003>.

<sup>31</sup> Brossard and Nisbet, “Deference to Scientific Authority among a Low Information Public: Understanding U.S. Opinion on Agricultural Biotechnology.”

<sup>32</sup> Halpin, “Scientific Objectivity and the Concept of ‘the Other.’”

### 2.3 Neuroimages in Science and Society

We arrive at an important intersection between visual and scientific domains with the emergence of brain scans. There are several imaging technologies that have been developed in the recent decades, which each offer different anatomical or functional views of the brain and other structures in the body. Revelatory yet non-invasive, these novel technologies allow experts to examine neural tissue and active biological processes in participants who are still alive at the time of the scanning. These devices showed immense potential in cognitive neuroscience and, as I will show in a subsequent chapter, their popularization among researchers played a significant role in the biomedicalization of psychiatry in the late twentieth century.

Like photographs, brain scans are technical reproductions. Despite being expensive and producible only by a handful of highly trained individuals, these images are technological reproductions that bear a certain resemblance to the original figure they are representing. Given this classification, brain scans are often thought to possess qualities of reproducibility that have afforded other technical reproductions claims of objectivity. This claim is corroborated by brain scans' primary appointment as figures from the scientific world. Thus, neuroimages command an authority of truth compounded by their status as both technical reproductions and scientific symbols.

It is worth considering whether neuroimaging technologies live up to this claim. As technical reproductions, brain scans are relatively accurate representations of the parameters they measure. Functional magnetic resonance imaging (fMRI), for example, measures changes in blood

flow with high spatial resolution.<sup>33</sup> Positron emission tomography (PET) scans detect traces of radioisotope decay of biologically relevant molecules with similar reliability.<sup>34</sup> New developments have led to improved accuracy and resolution, further improving the reliability of device measurements. A significant limitation to these methodologies, however accurate, is that they are only correlates of neural activity. While increased activation of brain regions are associated with changes in blood flow and brain metabolism, neural activity is measured indirectly and therefore the inferential power is partly diminished.<sup>35</sup> Other drawbacks include small sample sizes and questionable experimental validity.<sup>36</sup>

Despite these limitations, the photograph analogy is still widely used. Given that photography is a medium celebrated for its realism, the comparison has implications for the way that neuroimaging is perceived by laypeople. Adina Roskies has disputed this analogy, contending that neuroimages are different from photographs in important ways. These include the high degree of dependence on theoretical considerations in experimental design and image rendering, as well as the relatively shallow understanding of how these technologies operate to yield specific values.<sup>37</sup> With respect to public perceptions, however, the most interesting finding concerns the pseudo-coloration of neuroimages and their relation to the parameters they are representing. Roskies acknowledges that most individuals wouldn't mistake the coloration on an fMRI scan for

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<sup>33</sup> Glover, Gary H. 2011. "Overview of Functional Magnetic Resonance Imaging." *Neurosurgery Clinics of North America* 22 (2): 133–39. <https://doi.org/10.1016/j.nec.2010.11.001>.

<sup>34</sup> Vaquero, Juan José, and Paul Kinahan. 2015. "Positron Emission Tomography: Current Challenges and Opportunities for Technological Advances in Clinical and Preclinical Imaging Systems." *Annual Review of Biomedical Engineering* 17 (1): 385–414. <https://doi.org/10.1146/annurev-bioeng-071114-040723>.

<sup>35</sup> O'Connell, Garret, Janet De Wilde, Jane Haley, Kirsten Shuler, Burkhard Schafer, Peter Sandercock, and Joanna M Wardlaw. 2011. "The Brain, the Science and the Media." *EMBO Reports* 12 (7): 630–36. <https://doi.org/10.1038/embor.2011.115>.

<sup>36</sup> O'Connell et. al., "The Brain, the Science and the Media."

<sup>37</sup> Anderson, Nancy A, and Michael R Dietrich. 2018. *The Educated Eye: Visual Culture and Pedagogy in the Life Sciences*. UPNE., 264-265.

the actual coloration of brain tissue, but nonetheless argues that what these scans represent is hidden or ambiguous:

Importantly, colors are variously used in different studies to represent quite different parameters related to neural activity. Sometimes they are used to represent the percentage signal change during a performance of some task relative to another; other times they are used to reflect the statistical significance of the signal change, and other times the proportion or number of cases that show statistically significant changes in that relative location. Thus, the very same visual image could reflect a very different scientific datum, depending upon the intended interpretation... In the popular media the proper interpretation of the image is rarely made explicit, and moreover, the layperson is rarely aware that alternative interpretations are possible.<sup>38</sup>

Joseph Dumit points out a similar phenomenon that occurs in PET scans. In conversation with Michel Ter-Pogossian, one of the founders of PET, it is revealed that color distinctions are decided arbitrarily. Heat maps use a color gradient with an intuitive and systematized interpretation available, wherein warmer colors like orange and red represent hotter temperatures and cooler colors like green and blue represent cooler temperatures; there is no such gradient available with neuroimaging parameters.<sup>39</sup> Different laboratories have different conventions when representing imaging data with coloration, and therefore the same data may appear to yield completely distinctive brain scan images. To demonstrate this, Dumit includes a set of brain scans from PET

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<sup>38</sup> Anderson and Dietrich. *The Educated Eye: Visual Culture and Pedagogy in the Life Sciences.*, 264-265.

<sup>39</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 93.

scientist Brian Murphy that, despite being representations of the same data set, vary drastically in presentation due to differences in pseudo-coloration (Figure 3). In the interview, Ter-Pogassian discusses the misleading nature of artificially colored brain scans, admitting that “they signify whatever you want them to signify” and warns of the potential consequences of “artificially” representing phenomena using color.<sup>40</sup>

Dumit considers other aspects of brain image production which complicate the perceived objectivity of its resulting scans. When selecting which images from an experiment to include in research papers, scientists will often choose images which display differences between groups most drastically to underscore the significance of the findings.<sup>41</sup> A further complication is distinguishing normality from abnormality. Far from as simple as taking averages and assessing standard deviations, Dumit shows that a “normal” brain scan is carefully constructed to highlight deviations in the comparison group; moreover, values of normality are often derived from biased samples that exclude women and minoritized individuals in the interest of reducing variability.<sup>42</sup> Through each of these examples of bias and subjectivity embedded in the experimental design and production of brain scans, it becomes apparent that neuroimages are not the figures of infallible scientific truth they are often presupposed to be.

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<sup>40</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 93.

<sup>41</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 96.

<sup>42</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 63.



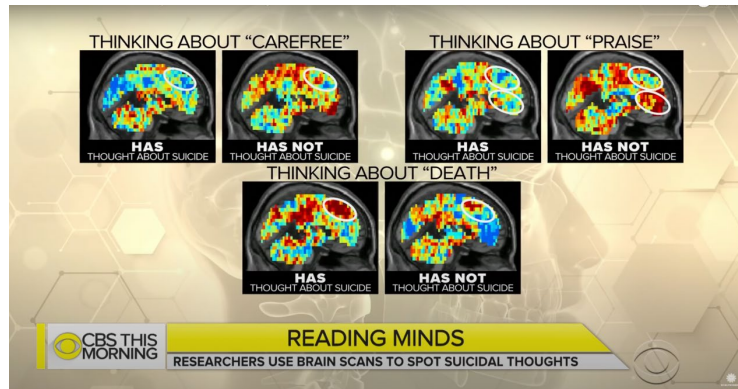
**Figure 3: Collection of identical brain scans, as provided by Dumit**

Societal misconceptions about the objectivity and authority of neuroimages are evident, and it is crucial to explore potential consequences. While these technologies are powerful research tools that have revolutionized the fields of cognitive neuroscience and functional brain mapping, their limitations remain unacknowledged or unknown in the public sphere and can have severe implications. Take the following headline on a CBS morning news segment: “Reading Minds: Researchers Use Brain Scans To Spot Suicidal Thoughts” (Figure 4).<sup>43</sup> Included in this segment are a series of brain scans in which represented categories – brains that have thought about suicide and brains that have not – are shown with contrasting activation patterns in response to certain prompts. In addition to providing no figure legend that explains what the color differences signify,

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<sup>43</sup> “Brain Scans Show Promise in Spotting Suicidal Thoughts.” 2019. [www.cbsnews.com](http://www.cbsnews.com). May 2, 2019. <https://www.cbsnews.com/news/new-research-shows-promise-in-spotting-suicidal-thoughts/>.

the claim that brain scans can be used to “read minds” and “spot suicidal thoughts” implies a level of sophistication well beyond the current capacities of these technologies.



**Figure 4: "Reading Minds" on CBS News**

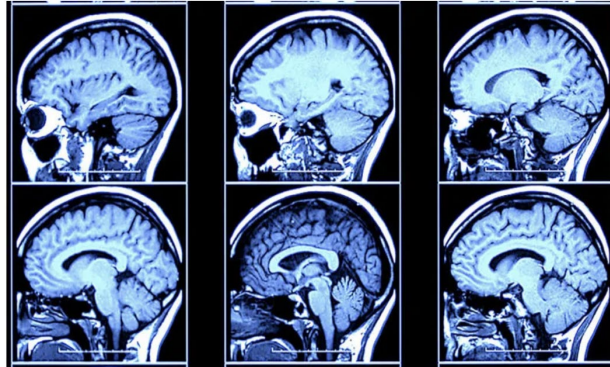
Another news article with a similarly provocative subject matter suggests that brain scans have shown distinctive differences in the minds of criminals when compared to those of the readers (Figure 5). CT scans are included, once again with no legend, and in fact don't even claim to have any relevance to the study findings: the caption reads “CT scans of a human brain” but makes no connection to the brain differences alluded to in the headline. It appears that the scans are included to add a layer of visual, scientific legitimacy to the content of the article.<sup>44</sup>

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<sup>44</sup> Moskowitz, Clara. 2011. “Criminal Minds Are Different from Yours, Brain Scans Reveal.” Livescience.com. Live Science. March 4, 2011. <https://www.livescience.com/13083-criminals-brain-neuroscience-ethics.html>.

## Criminal Minds Are Different From Yours, Brain Scans Reveal

News By Clara Moskowitz published March 04, 2011

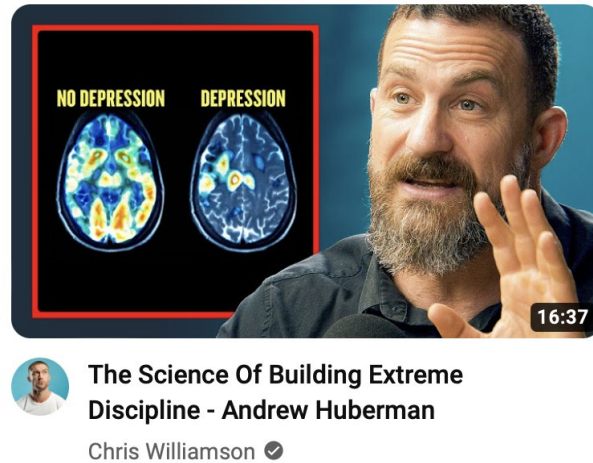


CT scans of a human brain. (Image credit: Dreamstime)

**Figure 5: Differences in the brains of criminals**

Evidence of this method exists in other forms of media. The thumbnails for popular YouTube videos include pairs of brain scans next to a photograph of famous Stanford neuroscientist Andrew Huberman. While both videos feature interview recordings and podcast clips of Huberman, neither include any discussion of or reference to neuroimaging scans. Moreover, the thumbnail for Chris Williamson’s video includes a comparison of brain scans labeled “No Depression” and “Depression” despite depression never being directly referenced in the video (Figure 6). In both cases, neuroimaging technology is included to advertise the legitimacy of the videos and root their content firmly within the scientific world.





**Figure 6: Neuroscientist Andrew Huberman placed beside brain scan image to reinforce video content**

The widespread usage of brain scans by the public, despite being unaware of the complexities and complications which underlie the production of these images, is reasonable. These images offer a bright, appealing representation of scientific information. The pseudo-coloration implies an intuitive takeaway reliant on cultural associations of certain colors that would otherwise be buried in numbers and jargon. A brain scan dominated by shades of blue and purple placed under the diagnostic label “depression” aligns with societal depictions of depression and therefore conveys a message far more persuasively than the data from which the image was derived. There exist dangers in this palatability, however. I’ve shown in the current section that brain scans can be employed by media creators to persuade the viewer into a belief that is demonstrably false, misleadingly hyperbolic, or completely irrelevant to the brain scan they’ve included. As Dumit argued, brain scan figures purport false or misleading conclusions with artificial and culturally significant coloration. Given the authority of neuroimaging technology in public perceptions of science, potential consequences relating to the spread of misinformation and propagation of stigmatizing ideologies are extensive and may prove difficult to contain.

## 2.4 Chapter Conclusion

As I've shown in this first chapter, the rhetorical potency of neuroimages can be derived from its visuality and its perceived scientific objectivity. A published and circulated brain scan contains a narrative that, despite its complexities and limitations, is often able to be deciphered using intuition and cultural knowledge alone. The origin of the image matters as well: because brain scans are products of science, they are trusted. This combination of intuition and institutional trust have facilitated the virality of these brain scan figures in contemporary social sectors. In the next two chapters, I will examine the effects of neuroimaging technology on scientific communication and popular media portrayals of mental illness.

### 3.0 Expert Visualizations of Schizophrenia

*I am fascinated and horrified by the possibility posed here, of a world in which technology can tell me who I truly am.*

Joseph Dumit, *Picturing Personhood*<sup>45</sup>

Schizophrenia is a psychiatric disorder that significantly alters individuals' perceptions of reality. The disorder is frequently associated with sensory hallucinations, delusions, psychosis, and disorganized or fragmented thought patterns; clinically, schizophrenia can also be characterized by social withdrawal, emotional disturbance, cognitive impairments, and other symptoms.<sup>46</sup> Schizophrenia's scientific history, much like its biological etiology, is rife with complications. These complications are reflected in the scientific images which sought to represent, diagnose, and categorize individuals. The primary aim of this chapter is to provide a history of scientific visualizations of schizophrenia from the late nineteenth century to the present. It is necessary to firmly ground these images in the periods from which they came; a second aim, therefore, is to provide historical context of schizophrenia's evolution as a medical concept. I will describe how an undefined condition of the late nineteenth century was transformed into the contemporary biomedical diagnosis of schizophrenia, interweaving images and stories of visualization

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<sup>45</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 141.

<sup>46</sup> Reddy, D, and Matcheri S. Keshavan MD. 2015. *Understanding Schizophrenia: A Practical Guide for Patients, Families, and Health Care Professionals*. ABC-CLIO.

throughout. The chapter will close at the biological revolution, at which point a new kind of image emerged.

An important parallel can be drawn between early and contemporary psychiatric science. While data was consistently represented using graphs, charts, and tables throughout the nineteenth and twentieth centuries, technical reproductions as a method of scientific visualization were employed primarily at the end of the nineteenth century and twentieth centuries. These periods align with moments in psychiatry where explanatory authority shifted towards biologically-oriented scientists. During these respective periods, technical reproductions played a distinct role. Using photography, early psychiatric researchers attempted to gain access to the mental and emotional content of individuals with mental illness to systematically observe, analyze, and categorize schizophrenia as a psychiatric diagnosis and phenomenological experience; contemporary biological scientists have used neuroimaging technology for much the same purpose. I argue that photographs and neuroimages have been used by psychiatric scientists to account for the internal lives of individuals with mental illness, which is otherwise inaccessible in a biological model of psychiatry.

From the outset, I am compelled to point out a mistake common to other histories of disease which I aim to avoid. In his own history of schizophrenia, Sander Gilman cautions the reader against sources whose “authors make no attempt to understand that this description [of individuals in earlier centuries] is the projection into the historical past of mid-twentieth-century diagnostic criteria.”<sup>47</sup> Gilman argues that the application of contemporary disease views to figures in history, especially for a disease whose definition is bound by both time and culture, is inherently flawed.

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<sup>47</sup> Gilman, Sander L. 1988. *Disease and Representation: Images of Illness from Madness to AIDS*. Ithaca: Cornell University Press.

It is not that examining these instances of illness is inherently unproductive; rather, the thoughtful historian must approach events of the past with a cautious awareness that modern conceptions of disease are products of the modern cultures in which they arose. Recognition of these cultural biases offers a historical rendering that avoids reification of the schizophrenia diagnosis and places limitations on the extension of twenty-first century ideology into the past.

### **3.1 Asylums, Degeneration, and Photography**

In the centuries that followed the community-focused care of the late Medieval and early Renaissance periods, asylums emerged as the primary destination of the severely mentally ill:

Originally, the lunatic asylum's mission was simply to offer the mentally ill a reasonably humane form of incarceration, an alternative to the horrors of the old madhouses, jails, and poor houses. Increasingly, however, the view took hold that there was something distinctly therapeutic about spending time in one of these places: that institutionalization was itself a form of treatment. The architecture, the grounds, the ward system, the system of rewards and punishments, the daily rhythm of work and recreation, the firm but fair way in which the staff managed the patients – all contributed, it was said, to the recovery of insanity.<sup>48</sup>

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<sup>48</sup> Harrington, Anne. 2019. *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*. New York: W.W. Norton & Company, 5.

In this passage, Anne Harrington suggests that asylums served two primary functions: first, to house and tend to the basic needs of the insane, and second, to cure or at least treat them. Other historians have contended that the implementation of asylums occurred alongside and resulted from industrialization, when the responsibility of caring for sick relatives in working class households became too great for family members to bear; on this view, the asylum operated almost exclusively as a form of social relief and control rather than as a medical care facility.<sup>49</sup> Regardless of their true role, the rise of asylums was widespread. During the nineteenth century, facilities that housed the insane were built throughout the western world. By the early twentieth century, nearly 250,000 individuals were housed in American asylums.<sup>50</sup>

By the late 1800s, much of the faith vested in asylums' therapeutic potential was lost. It became increasingly apparent that being admitted into these facilities did little to improve the outcomes of those with severe psychological distress.<sup>51</sup> Moreover, it was coming to light that those in charge were more invested in what the insane could do for them: asylum superintendents were known to assign and enforce the completion of laborious tasks under the guise of "labor therapy".<sup>52</sup> Neurologists and other brain scientists criticized these practices and advocated for a more scientific focus, with specific interest in studying the anatomy of asylum patients. After a decades-long power struggle over the rights of asylum patients, the neurologists prevailed and asylums became a hub for biomedical research of the insane.<sup>53</sup>

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<sup>49</sup> Wright, David. 1997. "Getting out of the Asylum: Understanding the Confinement of the Insane in the Nineteenth Century." *Social History of Medicine* 10 (1): 137–55. <https://doi.org/10.1093/shm/10.1.137>.

<sup>50</sup> Wright, "Getting out of the Asylum: Understanding the Confinement of the Insane in the Nineteenth Century."

<sup>51</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>52</sup> D. Ann Herring, and Alan C Swedlund. 2002. *Human Biologists in the Archives*. Cambridge University Press; Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>53</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

At the same time, a new school of thought around mental illness arrived as an outgrowth of Darwinism: the theory of degeneration. In the mid-nineteenth century, Charles Darwin's seminal publication *The Origin of Species* was released, detailing his theory of evolution and the principles which underlie it. While referring specifically to the survival and reproduction of biological organisms, Darwin's conclusions provided an intellectual framework for social and political theorists to posit new ideas about social theory and human nature.<sup>54</sup> Degeneration, based on Darwinian principles, was theorists' response to the crime, delinquency, and insanity that plagued their communities. The general theory of degeneration, despite undergoing modification several times throughout the nineteenth century, states that (1) there was a subset of individuals who were biologically unfit to exist in and interact with society, (2) individuals could pass their insufficiencies to offspring, and (3) with each new generation, the degeneracy typically worsens.<sup>55</sup> Predicated on the theories of evolution, degeneracy represented a divergence from earlier ideas about the etiology of mental illness in that it was rooted firmly in biology. For proponents of the general theory of degeneration, deviance was biologically-derived, heritable, and, importantly, incurable.<sup>56</sup> It should come as no surprise that many advocates of the degenerate theory were also advocates of eugenics and compulsory sterilization of the insane.<sup>57</sup>

Darwin's contributions to nineteenth century psychiatry did not stop here, however. In addition to his work on evolutionary theory, Darwin also studied the expression of emotions and eventually published the lesser known *The Expression of the Emotions in Man and Animals* in

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<sup>54</sup> Jarkko Jalava, Stephanie Griffiths, and Michael Maraun. 2015. *The Myth of the Born Criminal: Psychopathy, Neurobiology, and the Creation of the Modern Degenerate*. Toronto: Univ. Of Toronto Press.

<sup>55</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>56</sup> Jalava, Griffiths, and Maraun. *The Myth of the Born Criminal: Psychopathy, Neurobiology, and the Creation of the Modern Degenerate*.

<sup>57</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

which he systematically visualizes and describes individuals with psychological distress.<sup>58</sup> The recent invention and popularization of photography proved central to this end. Using photographs taken by James Crichton Browne, a psychiatrist and amateur photographer, Darwin attempts to scientifically examine and characterize the insane based on images. Below is an excerpt in which Darwin discusses the quality of a woman's hair from one of Brown's photographs (Figure 7):

Dr. Browne attributes the persistently rough condition of the hair in many insane patients, in part to their minds being always somewhat disturbed, and in part to the effects of habit, – that is, to the hair being frequently and strongly erected during their many recurrent paroxysms. In patients in whom the bristling of hair is extreme, the disease is generally permanent and mortal; but in others, in whom the bristling is moderate, as soon as they recover their health of mind the hair recovers its smoothness.<sup>59</sup>

Darwin then draws similarity between these images and the piloerection of hair follicles in animals, which often occurs in response to fear. In addition to, though perhaps unintentionally, isolating the psychiatric patient as bearing resemblance to non-human creatures, this commentary suggests a capacity to draw scientific conclusions from photographs. As Gilman argues, Darwin fails to “...question his own ability to interpret the visual material presented to him, even when drawing a totally false analogy between erection of the hair in animals and the insane.”<sup>60</sup>

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<sup>58</sup> Ekman, Paul. 2009. “Darwin's Contributions to Our Understanding of Emotional Expressions.” *Philosophical Transactions of the Royal Society B: Biological Sciences* 364 (1535): 3449–51. <https://doi.org/10.1098/rstb.2009.0189>.

<sup>59</sup> Darwin, Charles. (1872) 2018. *The Expression of the Emotions in Man and Animals*. Mineola, New York: Dover Publications, Inc., 296-297.

<sup>60</sup> Gilman, *Disease and Representation: Images of Illness from Madness to AIDS*.



Eventually recognizing the social and cultural biases that contaminate any attempt to analyze photographs of the insane for scientific purposes, Darwin ended his professional relationship with Browne.<sup>61</sup> Photography in psychiatry did not start and end with Darwin, however; several other attempts were made to visualize and study patients.<sup>62</sup>



**FIG. 19.**—From a photograph of an insane woman, to show the condition of her hair.

**Figure 7: Drawing based off a photograph, from Darwin's**  
*The Expression of the Emotions in Man and Animals*

Foremost among these attempts were those of Francis Galton, founder of the eugenics movement and second cousin to Darwin.<sup>63</sup> To support his theories of racial superiority and heritable inferiority, Galton photographed several “types” of social and ethnic deviants. Galton’s

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<sup>61</sup> Gilman, *Disease and Representation: Images of Illness from Madness to AIDS*.

<sup>62</sup> Gilman, *Disease and Representation: Images of Illness from Madness to AIDS*; Godbey, Emily. 2000. “Picture Me Sane: Photography and the Magic Lantern in a Nineteenth-Century Asylum.” *American Studies* 41 (1): 31–69.

<sup>63</sup> Farber, Steven A. 2008. “U.S. Scientists’ Role in the Eugenics Movement (1907–1939): A Contemporary Biologist’s Perspective.” *Zebrafish* 5 (4): 243–45. <https://doi.org/10.1089/zeb.2008.0576>.

composite portraits, which overlaid photographs of several subjects to yield a single fused image, were invented by Galton to profile criminal types and demonstrate the genetic dimension of criminality.<sup>64</sup> Less well known is Galton's work photographing asylum patients. Thousands of photographs were taken of patients at English asylums, including the Bethlem Royal Hospital and the Hanwell asylum, with intent to create composite photographs (Figure 8).<sup>65</sup> While meaningful composite portraits could not be rendered from the photographs he had collected, Galton failed to recognize this as evidence against his eugenic theories.<sup>66</sup>



**Figure 8: Photographs of a patient at Bethlem Hospital, from Francis Galton**

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<sup>64</sup> “Francis Galton and Composite Portraiture.” n.d. Galton.org. <https://galton.org/composite.htm>.

<sup>65</sup> “Composite Photographs: Bethlem Royal Hospital Patients.” n.d. Wellcome Collection. Accessed March 9, 2024. <https://wellcomecollection.org/works/vaktxt9>.

<sup>66</sup> “Galton's Asylum Photos: Typecast at UCL.” n.d. Bethlem Museum of the Mind. Accessed March 9, 2024. <https://museumofthemind.org.uk/blog/galtons-asylum-photos-typecast-at-ucl>.

The photographs taken by Darwin and Galton are among the first examples of patient visualizations in psychiatry. In an era that demanded scientific order, these images offered a means of systematically studying mental disorder. While false conclusions were reached from biased premises, the appeal of realism and authority of scientific findings explain the significance of these images. As I'll show below, the tradition of using photography in scientific psychiatry continued into the twentieth century.

### **3.2 Kraepelin's Dementia Praecox and Bleuler's Schizophrenia**

German psychiatrist Emil Kraepelin is credited with describing the first modern-day concept of schizophrenia.<sup>67</sup> His pioneering research investigated the symptomatology of mental disorders, which according to psychiatrist Nancy Andreasen were a diagnostic nightmare:

At the time [Kraepelin] began his work, confusion prevailed. If one were to walk into a psychiatric ward in the nineteenth century, one would find it filled with very sick patients being treated by doctors equally perplexed about the nature of their diagnoses, the causes and likely outcomes of their illness, and the best possible treatments. A patient who wandered around excitedly mumbling to himself might be called a case of “delirious mania,” but no one knew precisely what that meant... Descriptive names were applied, but they were not very helpful to clinicians. As long as no one knew which patients had similar

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<sup>67</sup> Kim Tornvall Mueser, and Dilip V Jeste. 2011. *Clinical Handbook of Schizophrenia*. New York: Guilford Press.

disorders and which disorders had a similar outcome, it was impossible to make any useful predictions about the future.<sup>68</sup>

In response to psychiatry's obvious need for diagnostic order, Kraepelin set out to systematically observe and describe the behaviors and prognoses of different patients. To that end, he performed what Anne Harrington dubs the first "big data" project in psychiatry by descriptively recounting interviews with patients from asylums throughout the Heidelberg region in an attempt to develop more empirically validated categories of mental illness.<sup>69</sup> Kraepelin's major conclusion was that, contrary to the accepted view at the time, not all cases of psychosis could be described as the same disorder and were not of universal origin. Rather, psychosis could be divided into two major categories: manic-depression, which was generally episodic and had a better prognosis, and dementia praecox, which was a progressive neurodegenerative disease that had lasting (usually permanent) impacts on the individual.<sup>70</sup> Dementia praecox, so-named because it was proposed by Kraepelin to be "early-onset dementia," is commonly thought of as the first modern conception of schizophrenia.<sup>71</sup>

Despite its significance in an evolving field, dementia praecox didn't last long as a diagnostic term. Eugen Bleuler, a psychoanalytically-oriented psychiatrist from Switzerland, became interested in psychiatry after his sister developed a form of psychosis early in his life.<sup>72</sup>

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<sup>68</sup> Andreasen, Nancy C. *The Broken Brain: The Biological Revolution in Psychiatry*, 15.

<sup>69</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>70</sup> Bar, Karl-Jurgen, and Andreas Ebert. 2010. "Emil Kraepelin: A Pioneer of Scientific Understanding of Psychiatry and Psychopharmacology." *Indian Journal of Psychiatry* 52 (2): 191. <https://doi.org/10.4103/0019-5545.64591>.

<sup>71</sup> Kyziridis, T.C. 2005. "Notes on the History of Schizophrenia." *German Journal of Psychiatry* 8 (3): 42–48.

<sup>72</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*; Yeragani, Vikram K. Ahabishekh, Hulegar Ashok, and John Baugh. 2012. "Paul Eugen Bleuler and the Origin of the Term

Bleuler engaged in long and meaningful conversations with patients on his wards and noticed something about the patients with dementia praecox: they were not, in all cases, “demented,” nor did they always have an early onset of symptoms.<sup>73</sup> Bleuler rejected Kraepelin’s classification, opting instead for the term “schizophrenia” which he first introduced in 1908. This term originates from the Greek *schizein* (“splitting”) and *phren* (“mind”) to characterize the fragmented thought and disoriented reality that Bleuler identified as a core feature of the condition. Importantly, Bleuler did not mean to suggest that patients with schizophrenia had “split personalities,” a common misconception among laypeople.<sup>74</sup>

While these early twentieth century efforts to clinically define schizophrenia represent a divergence from the haphazard categorization techniques set before them, the modes of visual representation remained. In fact, Kraepelin attempted to draw scientific conclusions from photographs of patients, just as Darwin and Galton had. In his 1919 work *Dementia Praecox and Paraphrenia*, Kraepelin describes a pathological feature of dementia praecox he terms “automatic obedience” in which patients lose the capacity to disobey orders and are more susceptible to domination by authority. One manifestation of this, according to Kraepelin, is “waxy flexibility... the preservation of whatever positions the patient may be put in, even though they may be uncomfortable.”<sup>75</sup> A photograph of six patients<sup>76</sup> is included which is posited to illustrate this

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Schizophrenia (SCHIZOPRENIEGRUPPE).” *Indian Journal of Psychiatry* 54 (1): 95.  
<https://doi.org/10.4103/0019-5545.94660>.

<sup>73</sup> Harrington, *Mind Fixers: Psychiatry’s Troubled Search for the Biology of Mental Illness*.

<sup>74</sup> Harrington, *Mind Fixers: Psychiatry’s Troubled Search for the Biology of Mental Illness*.

<sup>75</sup> Kraepelin, Emil. 1919. *Dementia Praecox and Paraphrenia*, 38.

<sup>76</sup> It is worth noting here that Kraepelin identifies these patients as “schizophrenic”. This work came after Bleuler’s introduction of the term schizophrenia, and in this work Kraepelin occasionally uses this term.

phenomenon (Figure 9). Kraepelin describes that the patients were “...put without difficulty in the peculiar positions and kept them, some with a sly laugh and others with rigid seriousness.”<sup>77</sup>



Fig. 3. Group of schizophrenic patients.

**Figure 9: Photograph of patients with schizophrenia assuming bizarre poses, from Kraepelin**

Kraepelin’s *Dementia Praecox and Paraphrenia* includes several other figure types to represent patients. These include photographed profiles to systematically characterize expressions, line graphs to represent mental efficiency (Figure 10), and samples of writing that display the incoherence of patients (Figure 11).<sup>78</sup> Each of these figures represent attempts at observing the interior life of patients and further developing a scientific understanding of the schizophrenic mind.

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<sup>77</sup> Kraepelin, Emil. 1919. *Dementia Praecox and Paraphrenia*, 38.

<sup>78</sup> Kraepelin, Emil. 1919. *Dementia Praecox and Paraphrenia*, 38.

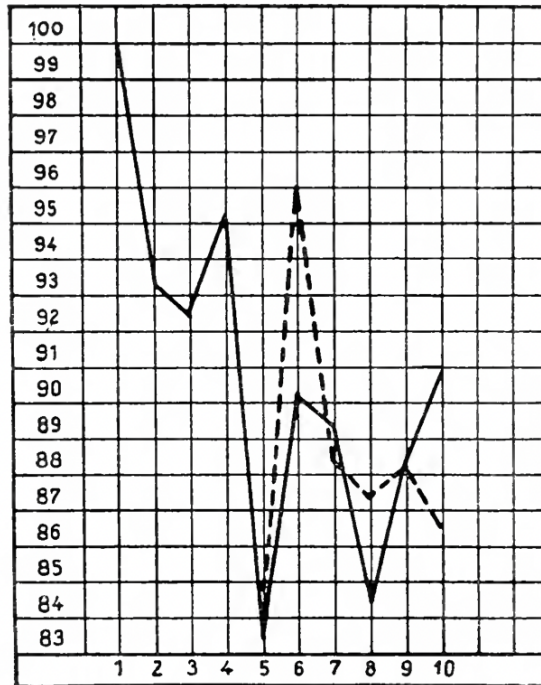


Fig. 1. Calculation tests in Dementia Praecox.

**Figure 10: Graph taken from Kraepelin's work which details results of a test for mental capacity**

Kraepelin's "dementia praecox" and Bleuler's "schizophrenia" represent early efforts in the shift toward a modern concept of schizophrenia. Both men acquired their diagnostic category from systematic empirical investigation of the symptomatology and life course of the disorder, marking a divergence from the largely speculative nature that characterized the field prior. Schizophrenia's history is far from complete, however; the twentieth century, as I describe below, was fraught with uncertainty.

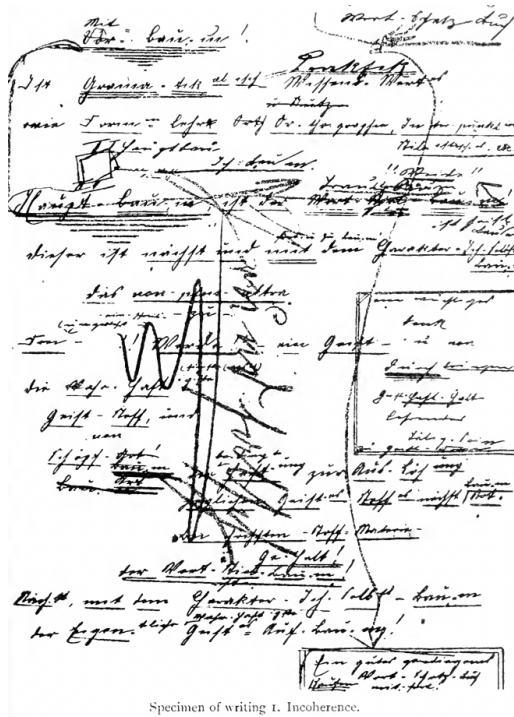


Figure 11: Writing Sample of a patient, from Kraepelin

### 3.3 Mid-Century Ambiguities

While the diagnostic terminology at the turn of the twentieth century had been revamped, psychiatrists’ knowledge of the causes and treatments of schizophrenia was still hopelessly thin. Interventions were attempted with trial-and-error, usually causing harm to the patient, and were almost always employed without the patient’s consent.<sup>79</sup> These treatments included insulin-induced coma and barbiturate-induced sleep therapy.<sup>80</sup> No intervention from this era, however, was more ignominious than the lobotomy. Also known as “psychosurgery,” lobotomies were

<sup>79</sup> Mueser, and Jeste, *Clinical Handbook of Schizophrenia*.

<sup>80</sup> Mueser, and Jeste, *Clinical Handbook of Schizophrenia*.



surgeries in which brain tissue was removed or intentionally destroyed in efforts to improve the outcomes of individuals with severe forms of mental illness. Originally developed by neurologist Egas Moniz in Portugal and popularized in the United States by psychiatrist Walter Freeman and neurosurgeon James Watts, lobotomization was purported to be a good-faith effort at healing the most treatment-resistant patients.<sup>81</sup> In a 1942 paper discussing a specific procedure called the prefrontal lobotomy, Freeman and Watts claim:

Psychosurgical operations are comparable to operations upon the sympathetic nervous system or upon the pain pathways of the central nervous system, in that anatomically normal structures are sacrificed in the interest of the health of the patient. Psychosurgery relieves mental pain.<sup>82</sup>

Later in their paper in their discussion of postoperative condition, Freeman and Watts insert a set of three photographs which feature the profile of a woman previously hospitalized for schizophrenia who underwent a prefrontal lobotomy (Figure 12). The photographs convey the transformation in facial expression which occurs in the woman from before the operation to five days after and then six months after the operation; these photos were chosen to represent the “characteristic alterations” which occur in patients who undergo prefrontal lobotomy.<sup>83</sup> Reminiscent of Darwin’s work on emotion, Freeman and Watts’ use of photography to visualize, describe, and classify the progression of mental illness in response to “treatment” is an example of

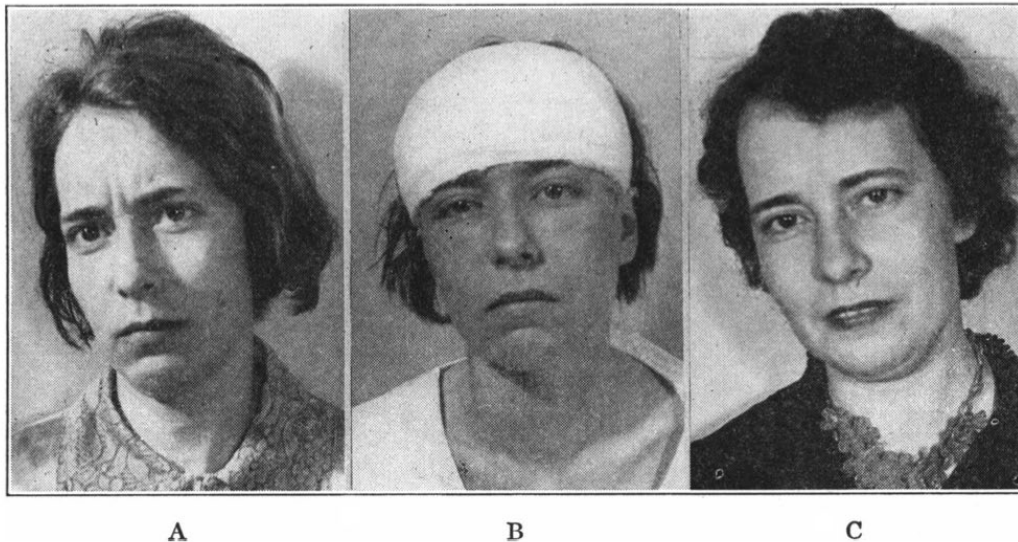
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<sup>81</sup> Harrington, *Mind Fixers: Psychiatry’s Troubled Search for the Biology of Mental Illness*.

<sup>82</sup> Freeman, Walter, and James W Watts. 1942. “Prefrontal Lobotomy: The Surgical Relief of Mental Pain.” *PubMed*, December.

<sup>83</sup> Freeman, and Watts. “Prefrontal Lobotomy: The Surgical Relief of Mental Pain.”

a theme which recurs throughout much of psychiatry's scientific history. Here, the before-and-after effect is visualized to show that an individual who is belligerent or emotionally troubled can, through lobotomization, achieve a state of peace or at least docility.



**Fig. 4—Characteristic alterations in facial expression following prefrontal lobotomy. Schizophrenic of four years institutionalization. A. Before operation. B. Five days after operation. C. Six months after operation.**

**Figure 12: Before and after photographs of a patient who has undergone prefrontal lobotomy, from Freeman and Watts**

While lobotomies were performed as late as the 1960s, the procedure was highly controversial and left much to be desired in terms of patient outcomes, despite early optimism from Freeman and Watts.<sup>84</sup> Given the inefficacy of lobotomization and the other early treatments of the twentieth century, and in lieu of alternative options, individuals with severe psychiatric troubles were funneled into psychiatric facilities in the early twentieth century.<sup>85</sup>

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<sup>84</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>85</sup> Mueser, and Jeste, *Clinical Handbook of Schizophrenia*.

From the 1940s to the 1970s, confusion around schizophrenia's etiology prevailed. Two distinctive ideologies of psychiatry formed and the field polarized: one aligned themselves with either the psychoanalysts or the biological psychiatrists, and both camps had vastly different beliefs about schizophrenia.<sup>86</sup> Given that the American Psychiatric Association was constituted of primarily Freudian leadership, psychiatry leaned toward the psychoanalytic.<sup>87</sup> The analysts placed special interest in the role of the family, and especially that of the mother. The "schizophrenogenic mother" was introduced as a term for a mother whose parenting style led her child to insanity. The schizophrenogenic mother is often represented as overprotective yet negligent, apathetic yet manipulative, and emotionally unavailable. Freudians endorsed this view of the schizophrenogenic mother as the cause of schizophrenia. Harrington contends that schizophrenia was possibly the most convincingly organic mental disorder and was therefore biological psychiatrists' strongest argument; it was all the more crucial, then, for the psychoanalysts to regain control of schizophrenia's etiology.<sup>88</sup> On this view, the decision to place mothers at the center of the schizophrenia diagnosis was at least partly a tactical one.

Later in the twentieth century, the focus of these theories broadened and, rather than localizing the mother specifically, the entire family was implicated in the development of schizophrenia. According to Systems theory, posited by Gregory Bateson and Don Jackson in 1956, those who fell victim to schizophrenia had likely grown up in families whose communication was veiled with inauthenticity and contradiction.<sup>89</sup> Family therapy became a staple intervention for individuals diagnosed with schizophrenia. Psychotherapists treated the entire family rather than

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<sup>86</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>87</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>88</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>89</sup> Bateson, Gregory, Don D. Jackson, Jay Haley, and John Weakland. 1956. "Toward a Theory of Schizophrenia." *Behavioral Science* 1 (4): 251–64. <https://doi.org/10.1002/bs.3830010402>.

focusing solely on the individual, and often harbored harsh feelings toward the parents that were usually made known in sessions.<sup>90</sup> The Systems theory held substantial influence in mid-twentieth century psychiatry, and families of schizophrenic patients felt the weight of these persecutory hypotheses well into the late twentieth century.<sup>91</sup>

Meanwhile, the biological psychiatrists were slowly making a case for themselves. Evidential support for the biological theory of schizophrenia, while convincing, came about fortuitously.<sup>92</sup> Psychopharmacology is an important example, with the development of drugs that, for various unexpected reasons, drastically altered the way schizophrenia was conceived. The most well-known case is likely that of chlorpromazine. First synthesized in 1951 as an anesthesia potentiator, the drug was not initially intended for psychiatric use. French surgeon Henri Laborit, while trialing the drug's efficacy at reducing surgical shock, noted that the patients remained conscious but became docile and agreeable.<sup>93</sup> After administering chlorpromazine to one of their psychotic patients, they had improved substantially despite minor complications.<sup>94</sup> Following subsequent successes, chlorpromazine burst onto the market as the first antipsychotic medication. The efficacy of chlorpromazine and its derivatives were studied extensively in the decades to follow. One 1965 study measures the effect of phenothiazine, a reference to chlorpromazine's chemical structure, on the outcomes of patients diagnosed with schizophrenia (Figure 13). The

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<sup>90</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>91</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>92</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>93</sup> Ban, Thomas. 2007. "Fifty Years Chlorpromazine: A Historical Perspective." *Neuropsychiatric Disease and Treatment* 3 (4): 495–500.

<sup>94</sup> Ban, "Fifty Years Chlorpromazine: A Historical Perspective."

study also provides a series of tables describing symptom and behavioral changes in several conditions, including both placebo and drug treatment groups (Figure 14).<sup>95</sup>

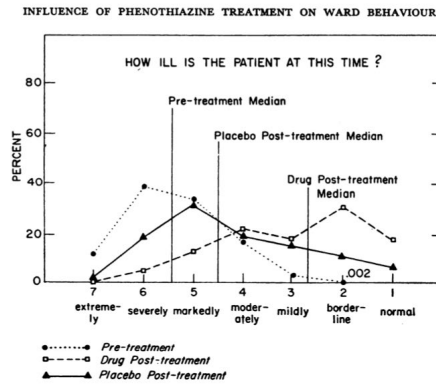


FIG. 1.

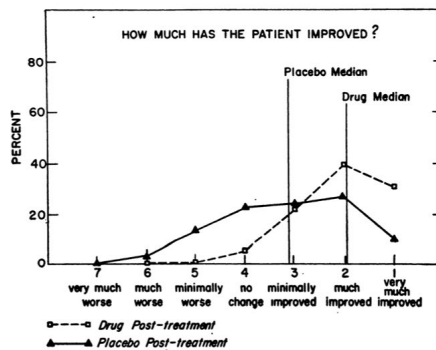


FIG. 2.

Figure 13: Graph displaying effects of phenothiazine treatment on ward behavior

<sup>95</sup> Goldberg, Solomon C., Gerald L. Klerman, and Jonathan O. Cole. 1965. "Changes in Schizophrenic Psychopathology and Ward Behaviour as a Function of Phenothiazine Treatment." *The British Journal of Psychiatry* 111 (471): 120–33. <https://doi.org/10.1192/bjp.111.471.120>.

TABLE III  
Symptom and Behaviour Changes Under Drug Treatment for Patients Manifesting the Symptom Prior to Treatment

Symptom and Behaviour	Score Range	Patients Manifesting		Pre-treatment		Post-treatment		Standardized Difference	
		N	%	Mean	SD	Mean	SD	Mean*	SD
Guilt .. .. .	5-38	175	68.8	14.897	7.554	9.949	5.562	.655	1.076
Appearance of sadness .. ..	1-6	187	73.5	4.091	1.467	3.102	1.848	.674	1.345
Resistive .. .. .	1-4	150	59.0	2.600	.794	2.060	1.166	.680	1.528
Slowed speech and movements	5-45	190	74.7	16.858	9.082	9.147	6.111	.849	1.105
Hostility .. .. .	5-45	183	71.9	17.601	9.097	9.814	7.126	.856	1.075
Irritability .. .. .	1-8	168	66.0	4.054	2.051	2.286	1.734	.862	1.052
Pressure of speech .. .. .	4-36	175	68.8	14.223	7.087	8.029	5.594	.874	1.029
Agitation and tension .. ..	6-50	253	99.4	19.549	8.856	11.047	5.112	.960	1.050
Delusions of grandeur .. ..	4-11	84	33.0	6.452	1.777	4.595	1.398	1.045	1.162
Ideas of persecution .. .. .	5-24	216	84.9	14.769	5.140	8.940	4.792	1.134	1.209
Indifference to environment	2-18	161	63.3	9.161	3.693	4.571	3.582	1.243	1.291
Self care .. .. .	1-13	185	72.7	6.043	3.526	1.519	1.000	1.283	1.065
Hebephrenic symptoms .. ..	2-10	122	47.9	5.311	1.882	2.607	1.388	1.437	1.094
Incoherent speech .. .. .	2-14	66	25.9	5.439	2.053	2.136	.493	1.456	1.059
Confusion .. .. .	1-5	214	84.1	3.981	1.092	2.234	1.357	1.600	1.434
Non-auditory hallucinations	2-10	46	18.1	4.761	1.610	2.087	.354	1.661	1.032
Feelings of unreality .. .. .	1-4	115	45.2	2.565	.736	1.330	.855	1.678	1.531
Auditory hallucinations .. ..	4-24	114	44.8	12.877	4.482	5.158	3.569	1.722	1.124
Social participation .. .. .	1-12	237	93.1	9.692	3.008	4.350	3.151	1.776	1.391
Memory deficit .. .. .	1-9	71	27.9	5.113	1.824	1.648	1.232	1.900	1.215
Disorientation .. .. .	1-6	38	14.9	4.421	1.664	1.000	0.000	2.056	1.000

\* All mean differences are significant at .01 level or less.

Figure 14: Chart displaying effects of treatment on patient symptoms and behavioral outcomes

Interestingly enough, the drug that sparked the most conversation about schizophrenia’s biological underpinnings was not one that reduced symptoms, but rather one that induced them.<sup>96</sup> In 1943, Swiss chemist Albert Hofman began studying a compound called lysergic acid diethylamide, colloquially known as LSD. After working directly with the compound, Hofman began to experience “a remarkable restlessness, combined with a slight dizziness... an uninterrupted stream of fantastic pictures, extraordinary shapes with an intense, kaleidoscopic play of colors.”<sup>97</sup> Hofman further examined the psychotropic effects of the compound, and three days following his laboratory accident, ingested 250 micrograms of LSD. Consequently, as Hofman detailed in his lab notes, his second experience was markedly different:

My surroundings had now transformed themselves in a most terrifying manner. Everything in the room spun around, and familiar objects and pieces of furniture assumed grotesque,

<sup>96</sup> Harrington, *Mind Fixers: Psychiatry’s Troubled Search for the Biology of Mental Illness*.

<sup>97</sup> Hofmann, Albert. 2019. *LSD, My Problem Child: Insights and Outlooks*. Oxford: Beckley Foundation.

threatening forms. They were in continuous motion, animated, as if driven by some inner restlessness. The lady from next door, whom I scarcely recognized, brought me milk – in the course of the evening, I drank more than two liters. She was no longer Mrs. R., but rather a malevolent, insidious witch with a colored mask.

Even worse than these demonic transformations of the outer world were the alterations that I perceived within myself, in my inner being... A demon had invaded me, had taken possession of my body, mind, and soul. I jumped and screamed, trying to free myself from him, but then sank back down and lay helpless on the sofa. The substance with which I had wished to experiment, had vanquished me.<sup>98</sup>

The descriptions from Hofman's journal are reminiscent of the sensory and phenomenological experiences that patients experiencing psychosis had reported. Hofman's account had raised the eyebrows of biological psychiatrists, who recognized the drug as "psychosis-mimicking" and launched several studies working with LSD and other psychedelic drugs to learn more about the nature and course of a psychotic episode (Figure 15 offers one example).<sup>99</sup> This experimentation led to a number of hypotheses about schizophrenia's molecular etiology, which implicated excesses of both norepinephrine and serotonin in the presence of psychotic symptoms given their structural similarity to the drugs mescaline and LSD, respectively.<sup>100</sup> While neither hypothesis ultimately succeeded in identifying the true cause of

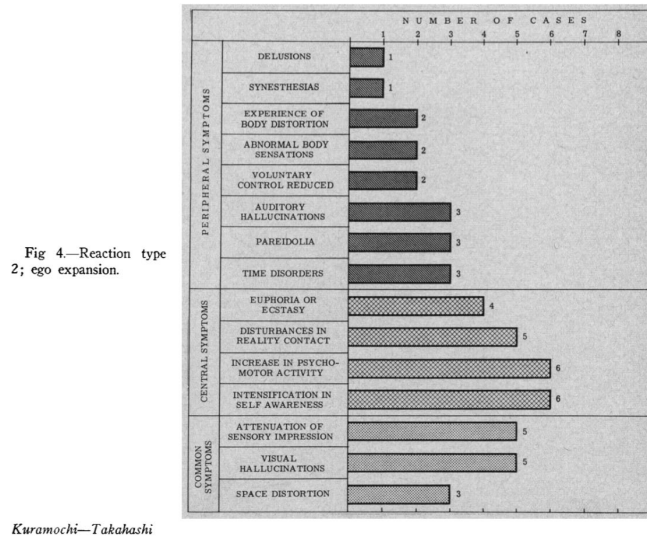
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<sup>98</sup> Hofmann, *LSD, My Problem Child: Insights And Outlooks*.

<sup>99</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*; Kuramochi, Hiroshima. 1964. "Psychopathology of LSD Intoxication." *Archives of General Psychiatry* 11 (2): 151. <https://doi.org/10.1001/archpsyc.1964.01720260045006>.

<sup>100</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

psychosis, the drug-induced studies reinvigorated research into the biological correlates of schizophrenia and other mental illnesses. In fact, these preliminary findings led to the study of dopamine, another neurotransmitter whose role in schizophrenia has remained a focus of study well into the twenty-first century.



**Figure 15: Chart displaying frequency of effects of LSD administration on subject behavior**

Following chlorpromazine’s early success and the hypotheses that stemmed from psychedelic experimentation, schizophrenia’s place in mid-twentieth century biological psychiatry had been solidified. Research by Seymour Kety demonstrated a genetic component to the illness, revealing that adopted children whose biological families had a history of schizophrenia posed a higher risk of developing schizophrenia themselves.<sup>101</sup> Moreover, several other antipsychotic drugs would be developed and manufactured in the second half of the twentieth century.<sup>102</sup>

<sup>101</sup> Harrington, Anne. 2012. “The Fall of the Schizophrenogenic Mother.” *The Lancet* 379 (9823): 1292–93.

[https://doi.org/10.1016/s0140-6736\(12\)60546-7](https://doi.org/10.1016/s0140-6736(12)60546-7).

<sup>102</sup> Kyziridis, “Notes on the History of Schizophrenia.”



Haloperidol, thioridazine, and clozapine were just a few of the drugs from the second half of the twentieth century designed for psychotic patients.

### 3.4 Deinstitutionalization and Revolt

With evidence mounting for the biological components of schizophrenia, the tides were shifting in psychiatry; psychoanalytic researchers were hard-pressed to match the findings of their biological counterparts. Moreover, the atrocities of Naziism and the European eugenics movement shed light on the treatments and methods of behavioral control that existed in the United States; this created a social pressure to move away from the inhumane practices that, for many, embodied life in a psychiatric institution, and toward a more intimate and individualized form of care in community settings.<sup>103</sup> Accordingly, there was an exodus of psychiatric patients from hospitals back into their communities. This shift was corroborated by the co-occurring anti-psychiatry movement, which argued strongly in favor of deinstitutionalization and the social construction of madness as a form of control.<sup>104</sup>

Though perhaps well-intentioned, the deinstitutionalization movement was seen by many as an egregious mistake. Enormous strain was placed on the community centers and facilities, which had to accommodate chronically ill patients well beyond their capacities.<sup>105</sup> Moreover, the

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<sup>103</sup> Niles, Chavon. 2013. "Examining the Deinstitutionalization Movement in North America." *Health Tomorrow: Interdisciplinarity and Internationality* 1 (1). <https://doi.org/10.25071/2564-4033.37273>.

<sup>104</sup> Nasser, Mervat. 1995. "The Rise and Fall of Anti-Psychiatry." *Psychiatric Bulletin* 19 (12): 743–46. <https://doi.org/10.1192/pb.19.12.743>.

<sup>105</sup> Bachrach, Leona L. 1981. "The Effects of Deinstitutionalization on General Hospital Psychiatry." *Psychiatric Services* 32 (11): 786–90. <https://doi.org/10.1176/ps.32.11.786>.

government had not delivered on the promise of more community centers, with only a fraction of the original number being built.<sup>106</sup> With hospitals downsizing and community spaces overflowing and overwhelmed, the majority of patients ended up back in the place that, according to psychiatric leadership at the time, had precipitated their hospitalizations to begin: their childhood homes. This irony was not lost on the families, who for decades had been ostracized and blamed for their children's illness by the family therapists and psychiatrists they'd initially gone to for help. Policy changes which cut off patients' access to necessary resources, and forced families to perform a level of care they were not prepared for, were a costly affront for the Freudians in charge.<sup>107</sup>

Parents found refuge in the biological theories that offered to exonerate them, eventually forming advocacy groups and charities that emphasized the organic nature of schizophrenia and raised money to fund further research efforts.<sup>108</sup> The most famous and influential among these groups is the National Alliance on Mental Illness (NAMI), whose reputation for leadership and advocacy in psychiatry continues to expand in the twenty-first century.<sup>109</sup> The National Alliance for Research on Schizophrenia and Depression, now known as the Brain and Behavior Research Foundation, also formed at this time and provides grants to scientists studying the biology of schizophrenia and other mental illnesses.<sup>110</sup>

The parent-led movements, compounded by the growing body of evidence in favor of biological explanations, cost psychoanalytic psychiatry its momentum. After a few failed attempts in the late 1970s to regain control and amend their practices to appeal to the growing movement

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<sup>106</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>107</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>108</sup> Harrington, *Mind Fixers: Psychiatry's Troubled Search for the Biology of Mental Illness*.

<sup>109</sup> "History - NAMI Wisconsin." n.d. NAMI Wisconsin. <https://namiwisconsin.org/about-nami-wisconsin/history/>.

<sup>110</sup> "Home Page." n.d. Home Page | Brain & Behavior Research Foundation. <https://bbrfoundation.org/>.

of discontented family members, the Freudians lost control of the schizophrenia diagnosis, along with the field's direction in general. Schizophrenia became an organic disorder of the brain, and with the help of advocacy groups, psychiatry was redefining itself as a discipline within medicine and biology.

### **3.5 Studying the Brain, Imaging the Brain**

Despite the successes of biological psychiatrists, still little was known about the neuropathological abnormalities that underlie mental illness. Crucially, though, there was hope:

In the closing years of the 1980s, a small group of scientists, scientific administrators, and political observers met to discuss how the remarkable advances and the opportunities for further progress in the basic and clinical sciences could be brought to the attention of the public and its elected representatives. It was agreed the time was opportune to initiate an identified national research endeavor that would describe attainable neuroscientific objectives pertinent to health issues.<sup>111</sup>

Murray Goldstein, a physician and commissioned medical officer in the United States Public Health Service, included the above passage in an article that outlines the reasons for and

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<sup>111</sup> Goldstein, M. 1990. "The Decade of the Brain: Challenge and Opportunities in Stroke Research." *Stroke* 21 (3): 373–74. <https://doi.org/10.1161/01.str.21.3.373>.

goals of President Bush’s official declaration of the 1990s as the “Decade of the Brain”.<sup>112</sup> In effect, this initiative redirected funding toward the development of neuroscientific research in efforts to advance the fields of neurology and psychiatry.<sup>113</sup> In particular, the development of neuroimaging technology was especially valued.<sup>114</sup>

Interest in the structure of the brain extends as far back as the anatomists of the early eighteenth century; given the rudimentary techniques available at the time, little more than false leads were offered and hope in this avenue of research was lost.<sup>115</sup> However, the tools of the late twentieth century offered a much more tantalizing image. In 1976, using the newly invented computed tomography (CT) scanner, the first modern imaging study on schizophrenia had revealed enlarged ventricles and decreased cortical volume in participants. These findings had sufficiently rekindled the flame, and numerous CT studies of schizophrenia followed.<sup>116</sup>

Impressive as they were, CT scans presented limitations in that they were unable to differentiate between white matter and gray matter, two different types of tissue in the brain that have distinct and important functions.<sup>117</sup> Magnetic resonance imaging (MRI) scans addressed this concern, offering an image that was clearer in resolution and able to distinguish white and gray matter. The first MRI study of schizophrenia in 1984 confirmed the findings of the preceding CT

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<sup>112</sup> Goldstein, M. 1990. “The Decade of the Brain: Challenge and Opportunities in Stroke Research.” *Stroke* 21 (3): 373–74. <https://doi.org/10.1161/01.str.21.3.373>;

“Murray Goldstein Bio.” n.d. [www.aocpm.org](http://www.aocpm.org). Accessed March 10, 2024. <https://www.aocpm.org/murray-goldstein-bio>.

<sup>113</sup> Goldstein, “The Decade of the Brain: Challenge and Opportunities in Stroke Research.”

<sup>114</sup> Harrington, *Mind Fixers: Psychiatry’s Troubled Search for the Biology of Mental Illness*.

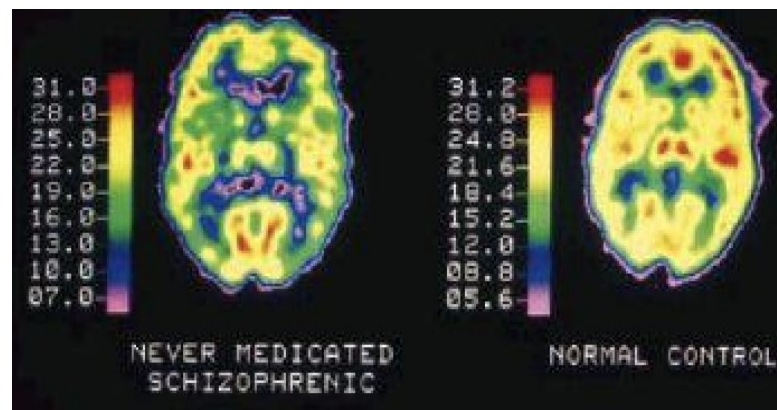
<sup>115</sup> Kyziridis, “Notes on the History of Schizophrenia.”

<sup>116</sup> Kyziridis, “Notes on the History of Schizophrenia.”

<sup>117</sup> Mueser, and Jeste, *Clinical Handbook of Schizophrenia*.

studies and additionally reported a disproportionate loss in cortical volume in the temporal lobe of the brain.<sup>118</sup>

In the early 1990s, functional neuroimaging technologies had arrived. These techniques, which include functional magnetic resonance imaging (fMRI), positron emission tomography (PET) imaging, and single photon emission computed tomography (SPECT) imaging, offered something new: a noninvasive structural map of the brain's functional activity.<sup>119</sup> fMRIs, which measure cerebral blood flow, have been used to study several important functional differences in schizophrenia, including executive function and working memory. PET and SPECT scans, which both use radiotracers to track neural activity, have been used to localize both positive (i.e., hallucinations, delusions) and negative (i.e., change in affect, social withdrawal) symptoms of schizophrenia to specific regions of the brain.<sup>120</sup>



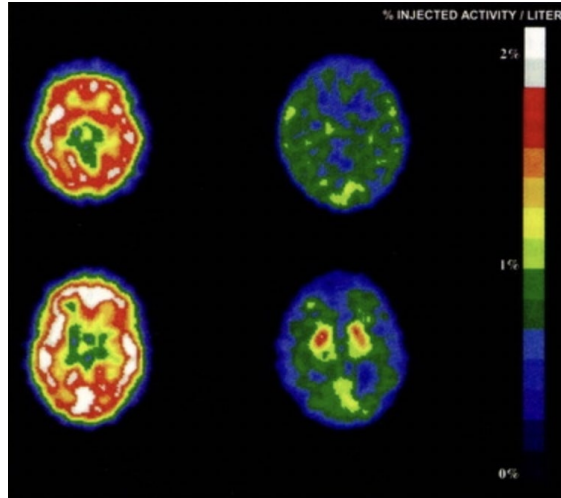
**Figure 16: PET scans used to show difference in activation patterns between a non-medicated individual with schizophrenia and an individual without psychiatric illness**

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<sup>118</sup> Mueser, and Jeste, *Clinical Handbook of Schizophrenia*.

<sup>119</sup> Mueser, and Jeste, *Clinical Handbook of Schizophrenia*.

<sup>120</sup> Mueser, and Jeste, *Clinical Handbook of Schizophrenia*.



**Figure 17: PET scans comparing activation patterns in schizophrenic patients with no medication (top left) and patients taking various other medications (bottom left, top right, bottom right)**

Neuroimaging technology yielded representations of the neural processes and activation patterns which underlie different mental illnesses and emotional states, such as the patterns observed in the brain scans pictured above (Figures 16<sup>121</sup> and 17<sup>122</sup>). Like the photographs of the early twentieth century, these scans purported to present a window into the interiority of an individual with schizophrenia. Neuroimages possess an added layer of sophistication compared to photographs, however; whereas the conclusions drawn from studying portraits and postural positioning of individuals with mental illness were arbitrary and largely false, brain scans are more closely grounded in scientific methodology and therefore offer increased inferential capacity.

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<sup>121</sup> Maher, Tracey. 2000. "Early Brain Screening May Predict Schizophrenia." *BMJ* 321 (Suppl S6): 0012443a. <https://doi.org/10.1136/sbmj.0012443a>.

<sup>122</sup> Trichard, Christian, Marie-Laure Paillère-Martinot, Dominique Attar-Levy, Christophe Recassens, François Monnet, and Jean-Luc Martinot. 1998. "Binding of Antipsychotic Drugs to Cortical 5-HT<sub>2A</sub>Receptors: A PET Study of Chlorpromazine, Clozapine, and Amisulpride in Schizophrenic Patients." *American Journal of Psychiatry* 155 (4): 505–8. <https://doi.org/10.1176/ajp.155.4.505>.

The promising research of the 1990s, while producing more knowledge of the brain and its processes, fell considerably short of its goal to change the course and treatment of individuals with severe mental illness. Neuroimaging technology, for all its anticipation, had “failed to have any appreciable impact on how the overwhelming majority of patients were diagnosed and treated.”<sup>123</sup> The biological revolution of the late twentieth century did yield some tangible improvements, especially from the pharmaceutical industry. New drugs were surfacing that more effectively, and less dangerously, targeted the symptoms that most afflicted individuals with severe illness; of note, second-generation (“atypical”) antipsychotics, including Clorazil, Risperdal, and Zyprexa, replaced first-generation antipsychotics like Chlorpromazine as the primary treatment option for individuals with schizophrenia and other psychotic disorders.<sup>124</sup> Nonetheless, many of the questions about schizophrenia and other mental illnesses remained unanswered by brain scans. Altogether, despite having a modest impact on psychiatry, the “Decade of the Brain” had not been as fruitful as its progenitors had hoped and its most watchful audience had needed.

### 3.6 Chapter Conclusion

This chapter represents my attempt to succinctly recapitulate the scientific and medical history of schizophrenia and its visualizations, from the nineteenth century to the turn of the twenty-first century. I’ve shown that technical reproductions have been used in biologically-oriented eras of psychiatry to offer a glimpse into the internal life of the schizophrenia patient. In

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<sup>123</sup> Harrington, *Mind Fixers: Psychiatry’s Troubled Search for the Biology of Mental Illness*.

<sup>124</sup> Harrington, *Mind Fixers: Psychiatry’s Troubled Search for the Biology of Mental Illness*.

the late nineteenth and early twentieth century, photographs were used to systematically study the emotions and tendencies of individuals with severe mental illness. In the mid-twentieth century, psychoanalytic theories posited explanations into what occurred within the schizophrenic mind and what unconscious conflicts the disorder had derived from. When biological theories regained authority, neuroimaging technology offered a method of studying the internal lives of individuals with mental disorders, which was not easily acquired in the biological paradigm.

In the next chapter, I will examine newspaper columns, movie and television scenes, televised news segments, public forums, and other sources of media from the mid-to-late twentieth century with the intention of better understanding how media portrayals and public perceptions about schizophrenia changed in light of neuroimaging and other technological advancements.



#### 4.0 Popular Representations of Schizophrenia Pre- and Post-Biological Revolution

*The banality of real mental illness comes into conflict with our need to have the mad be identifiable, different from ourselves. Our shock is always that they are really just like us.*

Sander Gilman, *Disease and Representation*<sup>125</sup>

In the late twentieth century, psychiatry underwent an ideological and methodological shift known as the biological revolution. With developments in scientific and medical technologies, knowledge about the biological correlates of serious mental illnesses increased substantially and theories which localized disorder to the moral character or the unconscious mind of an individual fell out of favor. This change in perspective is cited as a pivotal point for mental health advocates in the fight against social stigma.<sup>126</sup> If the causes of a person's socially deviant tendencies can be traced to their biology, then the person is hardly to blame for exhibiting those tendencies; moreover, their deviance is theoretically treatable, in much the same way that any other somatic disease is. With these lines of reasoning, it is often thought that damaging public images of mental illness had largely subsided as a direct result of psychiatry's sudden shift towards biological explanations. In this chapter, I critically examine the veracity of this claim. Through exploration into different avenues of popular culture, I will demonstrate that while some media depictions became more favorable in certain respects, many of the disparaging beliefs about individuals who suffer from mental illness remained present in public images decades later. In my analysis, I will

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<sup>125</sup> Gilman, *Disease and Representation: Images of Illness from Madness to AIDS*, 13.

<sup>126</sup> Sadler, John Z. 2009. "Commentary: Stigma, Conscience, and Science in Psychiatry: Past, Present, and Future." *Academic Medicine* 84 (4): 413–17. <https://doi.org/10.1097/acm.0b013e3181a08f32>.

place emphasis on how the circulation of neuroimaging figures in the media reinforced existing stereotypes while establishing entirely new categories of misrepresentation.

The epigraph placed at the start of this chapter offers an essential framework upon which this chapter was built. Taken from the first chapter of Sander Gilman's seminal text *Disease and Representation*, the quote describes a specific type of fear found in the public that is reserved only for outcasted or deviant members of a society. As Gilman contends, stark demarcations are created between health and mental disease not because such definitive demarcations exist, but rather from the public's need for security and control. If madness can be distinguished and isolated, threats to social order can be localized and contained.<sup>127</sup> This capacity for identification offers a second assurance: if what defines madness can be seen, a layer of visual separation is created between oneself and insanity.<sup>128</sup> In maintaining these ideological and visual differences, not only are the sources of broader anxieties confined to a select category of person, but the healthy member of society is also promised that they do not fall into that category.

In my analysis, two themes recur frequently: depictions of mental illness as comical, and depictions of mental illness as dangerous. My justification for isolating these themes is two-fold. First, these are common media tropes, according to both my own research and the existing work of others.<sup>129</sup> Second, humor and fear are two effective modes through which individuals with mental illness can be separated from the rest of society. Gilman writes:

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<sup>127</sup> Gilman, *Disease and Representation: Images of Illness from Madness to AIDS*, 8-9.

<sup>128</sup> Gilman, *Disease and Representation: Images of Illness from Madness to AIDS*, 5.

<sup>129</sup> Wahl, Otto F. 2003. *Media Madness: Public Images of Mental Illness*. New Brunswick, New Jersey: Rutgers University Press.

In some cases, the fearful is made harmless through being made comic; in some cases it looms as a threat, controlled only by making it visible. How we see the diseased, the mad, the polluting is a reflex of our own sense of control and the limits inherent in that sense of control.<sup>130</sup>

Later, he adds:

Our response to the perceived aggressiveness of the mad (as well as of all the other outsiders) reassures us. We have localized the source of our fear. We know who is dangerous. We respond correctly in such situations and thus have control over our world.<sup>131</sup>

In these passages, Gilman identifies humor and fear as effective outlets for public anxiety about mental illness. A society fears what it cannot control; these fears can be relieved through infantilization or containment of threats. I will show that motifs of comedy and horror in representations of schizophrenia facilitate a sense of power which the public exercises to mitigate their anxieties about mental illness, both before and after biological explanations gained prominence.

This chapter surveys three different categories of media: advertisement, film and television, and news reports. Each of these mediums will be examined both before and after the biological revolution. For the purposes of my argument, I will consider the biological revolution to have occurred in the mid-1980s. However, there is no absolute point at which psychiatry shifted from a

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<sup>130</sup> Gilman, *Disease and Representation: Images of Illness from Madness to AIDS*, 3.

<sup>131</sup> Gilman, *Disease and Representation: Images of Illness from Madness to AIDS*, 12.

pre- to a post-biological era, and it is important to keep in mind that this shift occurred gradually over the course of the late-twentieth and early-twenty first centuries. Therefore, while I categorize sources as either occurring before or after the revolution for simplicity as I show the trajectory of media representations, it is more accurate to think of these changes as occurring in a gradient that spans several decades.

#### 4.1 Amusement and Fear in Mid-Century Advertisements

Depictions of mental illness were frequently used in twentieth century advertisements. It is useful to remember that advertisements are designed to elicit powerful emotional responses which function to motivate and modulate a consumer's behavior. Therefore, any analysis of advertisements which feature schizophrenia and mental illness should consider not only the explicit visual content of the images, but also the underlying emotional content that is associated with these images and being manipulated by advertisers.

Otto Wahl argues that advertisements often portray mental illness in harmfully humorous ways, using offensive slang terms and images to capture and maintain the attention of consumers.<sup>132</sup> Wahl offers several examples. The logo for Crazy Eddie's Records and Tapes includes a cartoon figure with unkempt hair, an eccentric bowtie, and exaggerated facial features above the slogan "His Prices Are Insane!" (Figure 18).<sup>133</sup> A Volkswagon advertisement similarly depicts a man with disheveled hair and a frenzied smile below the bold-font tagline "To offer these

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<sup>132</sup> Wahl, *Media Madness: Public Images of Mental Illness*.

<sup>133</sup> Wahl, *Media Madness: Public Images of Mental Illness*;

"Crazy Eddie." n.d. Local Vyntage. Accessed March 10, 2024. <https://localvyntage.com/products/crazy-eddie>.

deals we'd have to be committed.”<sup>134</sup> A 1978 bumper sticker for the popular franchise *Garfield* reads “Welcome to the Funny Farm,” featuring the comic strip’s leading character in a straightjacket bouncing off the walls, tongue out and eyes pointing in opposite directions (Figure 19).<sup>135</sup>



Figure 18: Graphic t-shirt featuring the "Crazy Eddie" logo

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<sup>134</sup> Wahl, *Media Madness: Public Images of Mental Illness*, 38-39.

<sup>135</sup> Wahl, *Media Madness: Public Images of Mental Illness*;

“Vintage Garfield Welcome to the Funny Farm Bumper Sticker Sign 1978.” n.d. EBay. Accessed March 10, 2024. <https://www.ebay.com/itm/124962057272>.



**Figure 19: Garfield-themed bumper sticker that reads "Welcome to the Funny Farm"**

In making light of “crazy” people and “funny farms,” these advertisements indirectly capitalized on the suffering experienced by individuals with psychiatric illness. Beyond unethical marketing strategy, however, there are significant and damaging implications to the widespread distribution of these ads. Slogans drew parallels between the absurdity of the company’s prices and the irrationality of mental patients, suggesting that one must be out of their mind to offer products at such a low cost. Moreover, the featured images pulled from and contributed to a long-standing stereotype that individuals with mental illness are qualitatively distinct in their physical presentation when compared to their non-psychiatric counterparts. Visual tropes of wired hair and crazed eyes were used to signify that a character is insane, in turn reinforcing common views that individuals with mental illness embody these distinguishing features.

Advertisers in the twentieth century also relied on danger and fear to captivate their audiences. The poster for the 1948 thriller *The Snake Pit* presented the film’s protagonist, a young woman with schizophrenia, in two juxtaposed ways: first, with a whole-body shot that shows her to be well-groomed and put together with a calm, pleasant smile; second, with a close-up of her

face, rife with fear and anguish (Figure 20).<sup>136</sup> In addition to the inclusion of quintessential visual tropes such as the characteristically unkempt hair, the poster creates a feeling of unease in the viewer by focusing on the woman's emotional expressions. In this respect, the artistic rendering of schizophrenia is reminiscent of nineteenth and twentieth psychiatry's use of photography and captured expressions as windows into the inner lives of mental patients.



Figure 20: Promotional poster for the 1948 film "The Snake Pit"

Despite being classified as a comedy, promotions for the 1990 film *Crazy People* similarly revolve around fear. Rather than portraying a character as fearful, however, the design of the film's poster functions to evoke an ironic sense of danger in its viewers. In large, bolded font is the phrase "Warning: Crazy People Are Coming." Below this is a cartoon of a cracked egg replacing the head

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<sup>136</sup> "The Snake Pit." 2021. Wikipedia. October 15, 2021. [https://en.wikipedia.org/wiki/The\\_Snake\\_Pit](https://en.wikipedia.org/wiki/The_Snake_Pit).

of a person, whose arms are extended outward, immediately above the tagline “Inside every normal person something is waiting to get out” (Figure 21).<sup>137</sup> The poster, while not intended to elicit an authentic sense of fear in its viewer, nonetheless engages with the stereotype that individuals with mental illness are dangerous to attract attention. The provision of a “warning” clearly implies a threat associated with “crazy people,” who are represented by a comically menacing figure with a cultural symbol for insanity. The same is true for *Going Berserk*, a 1983 comedy whose film poster depicts three men locked in a cage suspended over the ocean (Figure 22). Entirely naked except for their eclectically patterned ties, the men are depicted in absurd and violent poses: the leftmost figure angrily fumbles for a monkey clung to his foot, the rightmost crouches in a primitive position while eating a banana, and the third beats down on the heads of the other two with his fists.<sup>138</sup> As with *Crazy People*, the film poster for *Going Berserk* appears to satirize the fear and mistrust towards mental illness and even alludes to the harmful portrayal of individuals as animalistic with the incorporation of primate-centered imagery.

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<sup>137</sup> Bill, Tony, Barry L. Young, Mitch Markowitz, Dudley Moore, Daryl Hannah, and Paul Reiser. 1990. “Crazy People.” IMDb. April 13, 1990. <https://www.imdb.com/title/tt0099316/>.

<sup>138</sup> Steinberg, David, Dana Olsen, John Candy, Joe Flaherty, and Eugene Levy. 1983. “Going Berserk.” IMDb. September 30, 1983. [https://www.imdb.com/title/tt0085603/?ref\\_=fn\\_al\\_tt\\_1](https://www.imdb.com/title/tt0085603/?ref_=fn_al_tt_1).



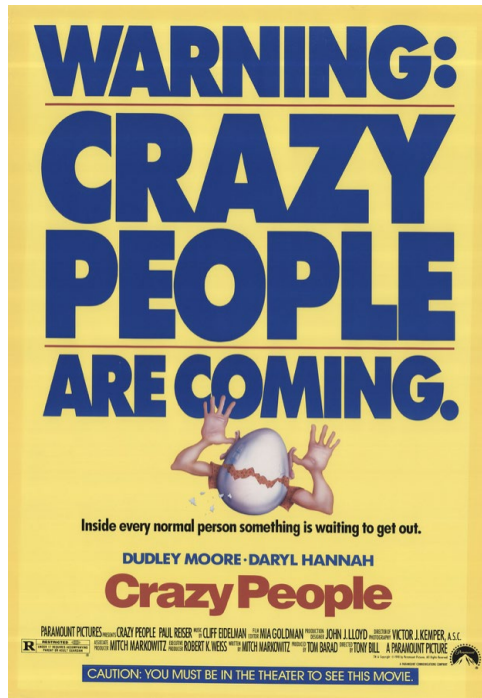


Figure 21: Promotional poster for the 1990 film "Crazy People"

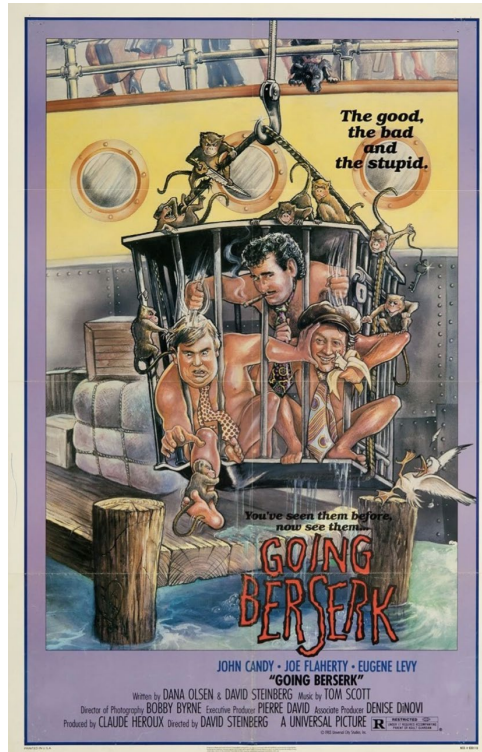


Figure 22: Promotional poster for the 1983 film "Going Berserk"

Fear was frequently leveraged in the promotion of various psychopharmaceuticals used to treat schizophrenia. A poster advertisement for chlorpromazine under its brand name Thorazine, depicts a domestic scene of a woman running away from a man as he attacks her. The ad further describes Thorazine as “...especially useful in controlling hyperactivity, irritability, and hostility,” cementing its role as a drug for dangerous individuals with mental illness (Figure 23).<sup>139</sup> A similar conclusion is reached in a 1970s advertisement for haloperidol (brand name ‘Haldol’), a powerful tranquilizer used to treat psychotic disorders. The ad features a black man angrily clenching his fist towards the viewer (Figure 24). Jonathan Metzl describes the racial dimension of danger present in this promotion:

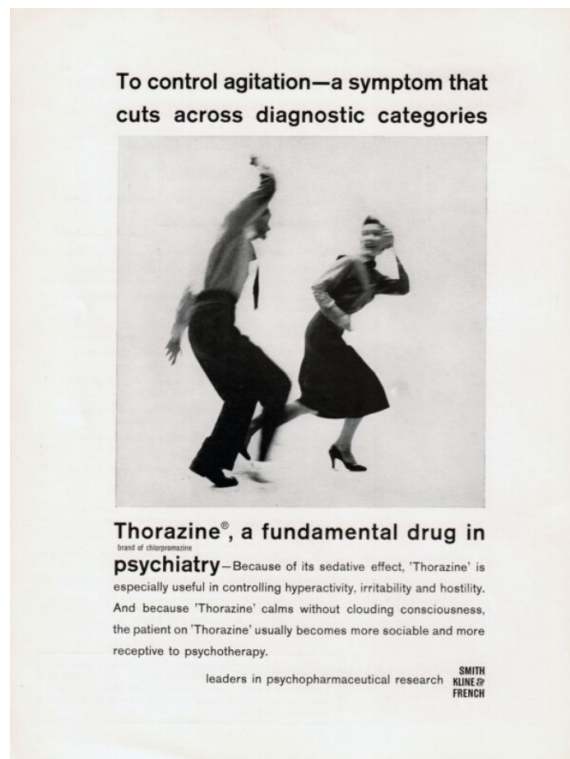
Nowhere was the racialized resonance between emerging definitions of schizophrenia and emerging anxieties about black protest seen more clearly than in pharmaceutical advertisements for new antipsychotic medications that appeared in the pages of leading American psychiatric journals... the high-profile ad [for Haldol] works by asking doctors to identify with their own projected fears – it asks its assumed white viewers to be scared. And the ad goes a step further by suggesting that a doctor’s racial anxiety could be assuaged by chemically subduing the threats represented by unruly black men. “Assaultive and belligerent?” the ad asks before answering its own, racially charged question. “Cooperation begins with Haldol.”<sup>140</sup>

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<sup>139</sup> Curator. n.d. “Chemical Reactions: Thorazine and the Pharmaceutical Revolution.” OSH Museum. <https://oshmuseum.org/exhibits/chemical-reactions-exhibit/>.

<sup>140</sup> Metzl, Jonathan. 2010. *The Protest Psychosis: How Schizophrenia Became a Black Disease*. Boston, Mass: Beacon, 102-103.

The promotions for Thorazine and Haldol, just two examples from a long list of pharmaceutical advertisements that fear-monger to sell products, each highlight aggression and violence as defining characteristics of schizophrenia. Unlike the comedy film posters, which portrayed this trope of danger in a trivial, lighthearted manner to make viewers laugh at the ridiculousness of the depicted scenes, the pharmaceutical ads construct a more authentic image of danger that exploits an existing fear of the psychotic individual and, if effective, fuels the desire to control reckless behaviors and establish docility in patients.



**Figure 23: Promotional poster for the antipsychotic medication Thorazine**



Figure 24: Promotional poster for the antipsychotic medication Haldol

## 4.2 Psycho-Killers On Screens

Nowhere are violent portrayals of mental illness more profuse than in horror films from the second half of the twentieth century. As several scholars have argued, a significant subsection of the horror genre made use of the “psycho-killer” trope to drive their storylines forward and enthrall their audiences.<sup>141</sup> As these storylines often go, individuals who are psychologically disturbed will commit murder and other detestable acts of deviance as a direct consequence of their psychological disturbance. These inaccurate portrayals attracted large audiences and had a sweeping impact on how mental illness was conceived in the public sphere.<sup>142</sup>

<sup>141</sup> Otto Wahl and Shawn M. Phillips, to name just a few.

<sup>142</sup> Hyler, Steven E., Glen O. Gabbard, and Irving Schneider. 1991. “Homicidal Maniacs and Narcissistic Parasites: Stigmatization of Mentally Ill Persons in the Movies.” *Psychiatric Services* 42 (10): 1044–48. <https://doi.org/10.1176/ps.42.10.1044>;

Despite the focused attention on mental illness, oftentimes little reference was made to specific psychiatric diagnoses. In fact, as Wahl outlines in his discussion of mentally ill killers in the media, fictional portrayals often conflate psychosis and psychopathy (redefined as “antisocial personality disorder”), two separate categories of psychiatric illness. These distinctive behavioral tendencies rarely converge on the same person, but nonetheless are often both present in some combination in popular fictional portrayals of mentally ill criminals.<sup>143</sup> It will become clear throughout this section that diagnostic intricacies faded into the periphery as screenwriters and film producers opted for a nonspecific and monolithic madness to account for the deviance of their antagonists.

Alfred Hitchcock’s *Psycho* (1960)<sup>144</sup> is frequently credited as the first major film to employ the use of a mentally ill killer. Norman Bates, manager of the Bates Motel, murders a guest while dressed as his deceased mother in the infamous shower scene (Figure 25).<sup>145</sup> Bates, who displayed delusional and disorganized thought patterns throughout the film, is thought to have exhibited many of the key clinical features of dissociative identity disorder; given the lack of public knowledge around this diagnosis, audiences often associated Bates’ character with schizophrenia.<sup>146</sup>

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Lipczynska, Sonya. 2015. “‘We All Go a Little Mad Sometimes’: The Problematic Depiction of Psychotic and Psychopathic Disorders in Cinema.” *Journal of Mental Health* 24 (2): 61–62. <https://doi.org/10.3109/09638237.2015.1022252>.

<sup>143</sup> Wahl, *Media Madness: Public Images of Mental Illness*, 19.

<sup>144</sup> “Psycho.” 1960. IMDb. September 8, 1960. <https://www.imdb.com/title/tt0054215/>.

<sup>145</sup> Wahl, *Media Madness: Public Images of Mental Illness*, 57.

<sup>146</sup> Mancine, Ryley. 2020. “Horror Movies and Mental Health Conditions through the Ages.” *American Journal of Psychiatry Residents’ Journal* 16 (1): 17–17. <https://doi.org/10.1176/appi.ajp-rj.2020.160110>.



**Figure 25: Shot from the infamous shower scene in Hitchcock's *Psycho*, showing the fear in the motel guest**

In the decades following *Psycho*'s release, the horror genre overflowed with films whose premises centered around a serial murderer with a psychiatric history. John Carpenter's *Halloween* (1983), for example, follows the well-known horror villain Michael Myers (Figure 26).<sup>147</sup> Shown making his violent escape from a psychiatric facility in the opening scene, Myers stalks his victims before murdering them in grotesque and graphic scenes. In a conversation with the town's deputy officer who notes that "[a] man wouldn't do that" upon finding a dog that had been killed and defiled, Myers' psychiatrist gravely responds that "[t]his isn't a man." Later, the psychiatrist reveals that after spending years trying to treat the troubled child who came into his care, he had resorted to keeping Myers locked away once he realized that "...what was living behind that boy's

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<sup>147</sup> Carpenter, John, John Carpenter, Debra Hill, Donald Pleasence, Jamie Lee Curtis, and Tony Moran. 1978. "Halloween." IMDb. October 27, 1978. [https://www.imdb.com/title/tt0077651/?ref\\_=nv\\_sr\\_srgs\\_1\\_tt\\_7\\_nm\\_0\\_q\\_hallowee](https://www.imdb.com/title/tt0077651/?ref_=nv_sr_srgs_1_tt_7_nm_0_q_hallowee).

eyes was purely and simply evil.” Several other films, including *Maniac* (1963), *Nightmare on Elm Street* (1963), and *Friday the 13th* (1980) make similar use of mental illness as a plot device, wielding nondescript psychological disturbance as the primary or sole reasoning for acts of twisted criminality.<sup>148</sup>



**Figure 26: Shot of Michael Myers in Carpenter's *Halloween***

### **4.3 Sensationalism and Alienation in the Headlines**

Stories which emphasize the violent tendencies and unnerving qualities of schizophrenia and other mental illnesses are not exclusive to fiction; themes of danger and difference made their way into real-world newspaper headlines in the mid-to-late twentieth century. It is important in examining these headlines to pay close attention to what journalists and editors consider

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<sup>148</sup>Wahl, *Media Madness: Public Images of Mental Illness*, 57.

“newsworthy” regarding mental illness. Which stories make the cut, and why? What is the message to viewers?

It should be unsurprising, given the frequency of violence in advertising and film, that newspapers were also littered with depictions of mentally ill individuals as hostile. Many headlines, whose bolded block letters, and prominent positioning at the top of a page attract the reader’s attention in much the same way that an image might, place fear-inducing language alongside stigmatizing labels that conjure potent negative associations about mental illness. A 1983 *New York Post* headline reads “Freed Mental Patient Kills Mom” (Figure 27).<sup>149</sup> Another from the *Kingsport Times-News* (1985) reports that a “Violent Schizophrenic Goes On Trial”.<sup>150</sup> The *Belleville News* published a 1979 story titled “‘Homicidal Maniac’ changes his ways after finding Jesus.”<sup>151</sup> From these headlines, the viewer learns not only to view mental illness as a threat to the safety of innocent victims, but also that this life of savage insanity is a moral failing which can be corrected through commitment to religion.

The *Toronto Star* released a story in 1973 under the headline “Killer of Toronto policeman identified as the ‘homicidal maniac’ in rape case” (Figure 28).<sup>152</sup> A photographed mugshot of the perpetrator, David Brian Holmes, was included next to an artist’s rendering, which both captured the man’s long unkempt hair, unshaven face, and soulless stare. The article juxtaposes this with an image of James Majury, the officer who created the initial composite sketch; Majury’s all-business

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<sup>149</sup> Wahl, *Media Madness: Public Images of Mental Illness*, 77.

<sup>150</sup> “Mar 20, 1985, Page 39 - Kingsport Times-News at Newspapers.com.” n.d. Newspapers.com. Accessed March 10, 2024. <https://www.newspapers.com/image/594076227/?terms=violent%20schizophrenic&match=1>.

<sup>151</sup> “Jun 21, 1979, Page 6 - the Belleville News-Democrat at Newspapers.com.” n.d. Newspapers.com. Accessed March 10, 2024. <https://www.newspapers.com/image/766697726/?terms=homicidal%20maniac&match=1>

<sup>152</sup> “Jan 18, 1973, Page 2 - the Toronto Star at Newspapers.com.” n.d. Newspapers.com. Accessed March 10, 2024. <https://www.newspapers.com/image/948009974/?terms=%22Killer%20of%20Toronto%20policeman%20identified%20as%20the%20%27homicidal%20maniac%27%20in%20rape%20case%22.&match=1>.



crew cut and clean-shaven smile accentuate Holmes's depravity and create a clear visual distinction between sanity and insanity.

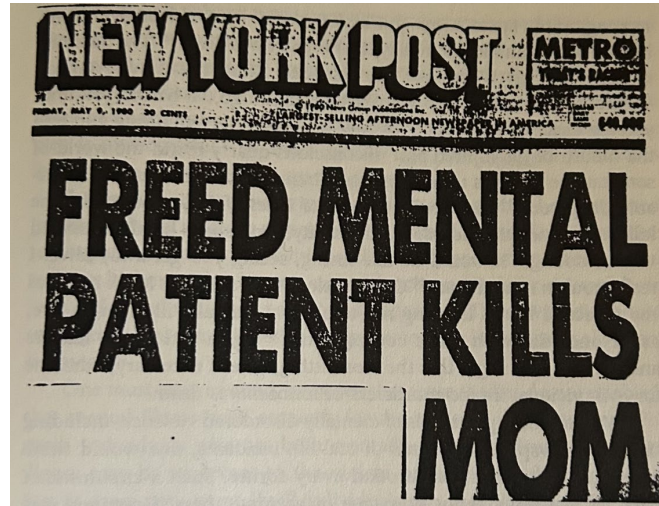


Figure 27: New York Post article which sensationalizes violence and emphasizes mental status

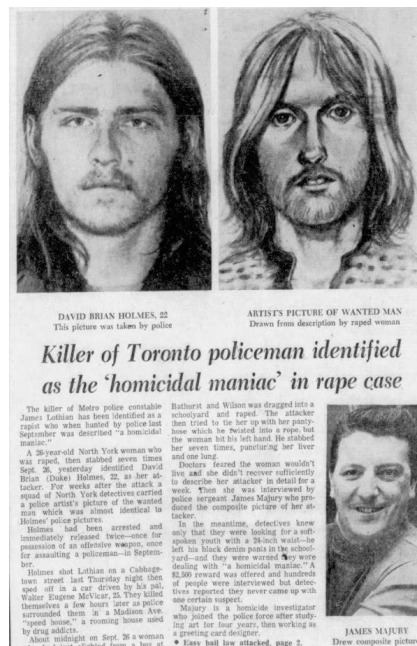


Figure 28: Toronto news article features profile photograph of "homocidal maniac"

In accordance with this distinction, another common theme in mid-century news articles was the emphasis on creating separation between the healthy majority and society's psychological deviants. One way of accomplishing this was to portray individuals with schizophrenia as broken or fragmented, leaning into popular misconceptions that thought schizophrenia to be synonymous with multiple personality disorder. A 1973 article from the Maine-based newspaper *Evening Express* headlined "Schizophrenia Is Where Smiling Face Can Scare" inserts an illustration of a human-like figure splitting into two, creating two overlapping figures and a set of three empty eyes fixed on the viewer (Figure 29).<sup>153</sup> Once again implying that fear is an appropriate response to psychiatric illness with both the headline and the unsettling portrayal, the article further suggests a "splitting" of the schizophrenic individual. A 1984 issue of the Lincoln Journal Star similarly includes a featureless cartoon figure whose body is fragmented and even remarks that "...many schizophrenics exhibit multiple personalities" (Figure 30).<sup>154</sup>

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<sup>153</sup> "Nov 22, 1972, Page 11 - Evening Express at Newspapers.com." n.d. Newspapers.com. Accessed March 10, 2024. <https://www.newspapers.com/image/853263661/?match=1>.

<sup>154</sup> "Dec 16, 1984, Page 38 - Lincoln Journal Star at Newspapers.com." n.d. Newspapers.com. Accessed March 10, 2024. <https://www.newspapers.com/image/312476992/?match=1>.



Figure 29: "Schizophrenia is where the smiling face can scare."

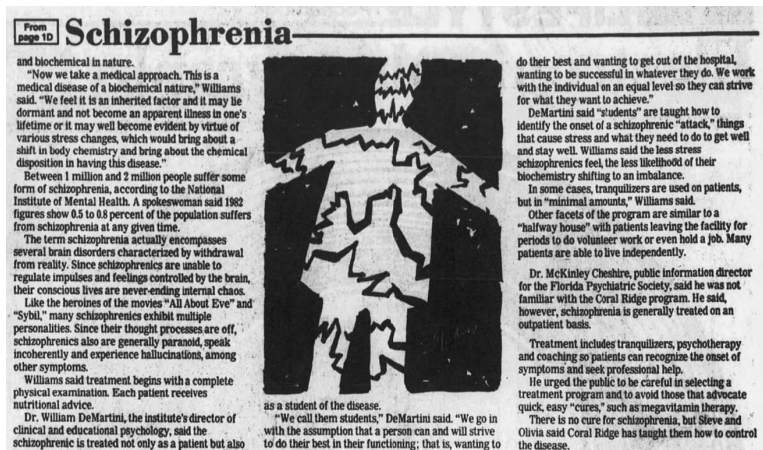
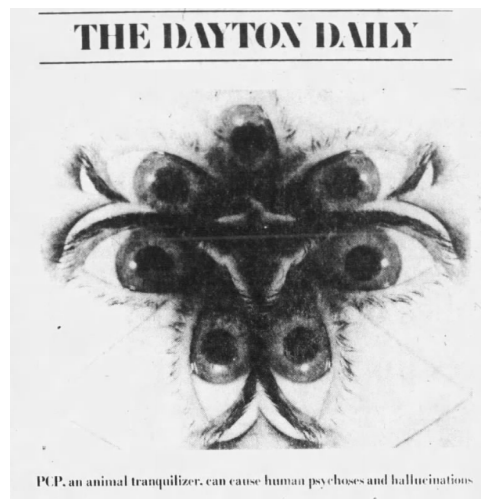


Figure 30: Article from Lincoln Journal Star which portrays individuals with schizophrenia as fragmented

Other articles indicated a certain elusivity to the experiential aspects of schizophrenia. A Maryland newspaper issued an article in 1984 exploring the "secrets of schizophrenia" and explains that while most individuals with the illness did not commit crimes, the ones who did were

acting out of fear from the paranoid delusions they were experiencing and therefore were “very unpredictable, and the crimes...can be bloody and spectacular”.<sup>155</sup> A 1978 article from *Dayton Daily News* covering recent abuse of an animal tranquilizer compared the drug to schizophrenia, claiming that “...what PCP is notorious for producing in humans is a chillingly accurate imitation of craziness - schizophrenia - which may persist even after the drug use stops”. Included in the article is a kaleidoscopic image of human eyes with the caption “PCP, an animal tranquilizer, can cause human psychoses and hallucinations” (Figure 31).<sup>156</sup> This image, which is not referenced anywhere in the article, attempts to recreate the imagined experience of psychosis.



**Figure 31: What human psychoses look like, according to the Dayton Daily**

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<sup>155</sup> “Jul 26, 1984, Page 6 - the Evening Sun at Newspapers.com.” n.d. Newspapers.com. Accessed March 10, 2024. <https://www.newspapers.com/image/372691415/?terms=secrets%20of%20schizophrenia&match=1>.

<sup>156</sup> “Aug 09, 1978, Page 11 - Dayton Daily News at Newspapers.com.” n.d. Newspapers.com. Accessed March 11, 2024. <https://www.newspapers.com/image/405609369/?terms=PCP%2C%20an%20animal%20tranquilizer%2C%20can%20cause%20human%20psychoses%20and%20hallucinations&match=1>.

#### 4.4 Neuroimages and (Ab)normality in the Press

With the development and popularization of neuroimaging technologies in the late twentieth century, news coverage of schizophrenia had undergone important changes. The biological revolution in psychiatry ushered in new and seemingly evolved attitudes about serious mental illness, with more being uncovered about the molecular and anatomical underpinnings of schizophrenia. Motifs of elusivity and mysticism were replaced by those of curiosity and promise, with brain scans operating as the poster children in this trend towards the biological.

The shift is apparent in headlines from the last few decades of the twentieth century. In 1990, for example, *The Bellingham Herald* published a story titled “Schizophrenics’ brains different” and describes investigations that purported to find differences in the anatomical structure of the brains of individuals suffering from schizophrenia when compared to identical twins without the disease.<sup>157</sup> A story from later that same year, “Brain Studies Finding Clues to Schizophrenia,” was published in the health column of the *Rutland Daily Herald* and reported that the development of schizophrenia is heavily influenced by certain genes.<sup>158</sup> Yet another article, “Mental illness isn’t all in the mind – it’s in the physical brain,” cites neuroimaging technology as an important factor in the shifting landscape of schizophrenia research.<sup>159</sup>

These reports and others are often thought to have facilitated more sympathetic public opinions on issues related to schizophrenia and other mental illnesses. In fact, a section of *The Los*

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<sup>157</sup> “Mar 22, 1990, Page 6 - the Bellingham Herald at Newspapers.com.” 1990. Newspapers.com. March 22, 1990. <https://www.newspapers.com/image/770650017/?terms=schizophrenic%20brain&match=1>.

<sup>158</sup> “Jul 22, 1990, Page 28 - Rutland Daily Herald at Newspapers.com.” 1990. Newspapers.com. July 22, 1990. <https://www.newspapers.com/image/534998752/?terms=schizophrenia&match=1>.

<sup>159</sup> “Jul 16, 1996, Page 36 - Hartford Courant at Newspapers.com.” n.d. Newspapers.com. Accessed March 11, 2024. <https://www.newspapers.com/image/177002159/?terms=schizophrenia&match=1>.

*Angeles Times* dedicated to neuroscientific research features the article “Illnesses: Attitudes Have Shifted in the U.S.” alongside a photographic profile of a man named Chris Hanson (Figure 32).<sup>160</sup> Hanson, as the caption notes, has suffered from schizophrenia since he was a teenager. The photograph is a close-up shot that conveys a sense of despair to the reader, and is accompanied by a quote from Hanson that reads, “I wish it would be over sometimes – just stop it, you know?” The article is a refreshingly thoughtful depiction of schizophrenia: rather than relying on tropes of difference or fear to captivate audiences, *The Los Angeles Times* provides up-to-date scientific information about, and concurrently humanizes the individuals who live with, schizophrenia. A 1999 article from Florida sympathizes with the families of individuals with schizophrenia, and even offers a fact sheet with information about the disorder and easy-to-read charts regarding demographic breakdowns and treatment outcomes.<sup>161</sup>

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<sup>160</sup> “Oct 15, 1996, Page 210 - the Los Angeles Times at Newspapers.com.” n.d. Newspapers.com. Accessed March 11, 2024. <https://www.newspapers.com/image/160141905/>.

<sup>161</sup> “Feb 16, 1999, Page 38 - Pensacola News Journal at Newspapers.com.” n.d. Newspapers.com. Accessed March 11, 2024. <https://www.newspapers.com/image/268441836/?terms=schizophrenia&match=1>.

## ILLNESSES: Attitudes Have Shifted in the U.S.

Continued from A1  
ent type of human being," he said of schizophrenics. "People think of us as an animal."

Hanson has spent his life struggling with an illness categorized—often disparagingly—as "mental." But schizophrenia, most experts now agree, is no less physical a disorder than diabetes or heart disease. Often, it is more devastating to patients and their families.

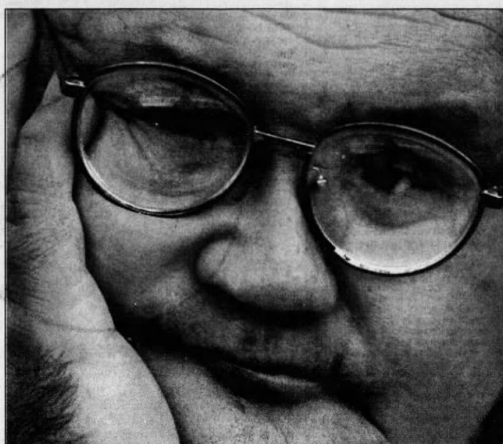
At last, the walls are crumbling—these spurious divisions between what aggraves the human mind and what ails the brain. Neuro-imaging, drug discoveries and patients' painful experiences are exposing these categories as flimsy constructions.

For schizophrenics like Hanson and for millions who suffer mental disorders, that brings some relief—and hope. There is comfort simply in knowing that signs of once-stigmatised diseases such as depression, obsessive-compulsive disorder and schizophrenia can be picked up on brain scans. Beyond that, the scans and other advances raise the possibility of successful treatments.

New techniques have "remarkably changed our consciousness . . . given us a whole new vista in thinking about the basic biology of the diseases and approaches to treatment," federal researcher Daniel Weinberger told a public forum at Caltech last summer.

The findings do not suggest that biology is destiny. Rather, nature and nurture interact to shape the mind, the environment constantly tinkers with the physiology of the brain. Behavior is both an effect and a cause of cerebral changes.

Even as they open possibilities, the discoveries ignite debate over



MARK BOSTER / Los Angeles Times

'I wish it would be over sometimes—just stop it, you know?'

—Chris Hanson, 48, who twice tried to kill himself, has struggled with schizophrenia since he was 16.

schizophrenics activate the parts of the brain used to perceive sights or process speech. They do apparently hear voices, and they do see things, even if others don't.

Drugs are the first line of defense.

Most successful medications block activity of the brain chemical dopamine, thought to be out of balance in schizophrenia. However, these often carry discouraging side effects—freezing and shuffling similar to the symptoms of Parkinson's disease, for instance. Not so with the acclaimed drug Clozapine—but that medication occasionally causes perilous bone marrow toxicity. Less risky compounds with the advantages of Clozapine are in various stages of development, including one approved by the FDA this month.

But non-drug approaches can also help. Patients relapse less often—and may even be able to reduce drug dosages—when coached in social and independent living skills, said UCLA psychiatrist Robert Liberman, who has studied the disorder for 30 years. Their brains, he says, can be retrained to cope better with stress.

"This lends a lot of optimism to the treatment process," he said. "One isn't relegated to using biological elements for what is a biological disorder—one can exploit the environment."

### 'Shake in the Mind'

When Joyce Cerrone was 9, her brother spooked her with tales of snakes and spiders. She took to meticulously checking for these invaders each night between her sheets and in her closets.

Figure 32: Sympathetic portrayal of schizophrenia in the Pensacola News Journal

Despite observable progress in several articles, stigmatizing ideas and images were still widespread in news coverage of serious mental illness and took on new forms. Newspapers and magazines continued to create and enforce strict dichotomies between individuals with schizophrenia and those without, but now with the support of visualized scientific authority to back their claims. An early example is the July 1983 issue of *Vogue*, which includes a story about the recent popularization of PET scanning technology into medical and neural sciences. Included was a figure with three brain scans, labeled NORMAL, DEPRESSED, and SCHIZO, respectively (Figure 33).<sup>162</sup> Each image featured a different assortment of colors: the “normal brain” was mainly yellow balanced with green and tinges of blue and red; the “depressed” brain was overwhelmed with by the cooler shades of blue and green, with little yellow and no red; the “schizo” brain, by contrast, is marked by a large red blot. As Joseph Dumit explains about the

<sup>162</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*.

images, “the article does not need to be read to be understood.” He elaborates on the social potency of the brain scan set:

Facing the brain images in *Vogue*, there appears to be something *intuitively right* about a brain-imaging machine being able to show us the difference between schizophrenic brains, depressed brains, and normal ones. This persuasive force suggests that we ignore the category question of whether three kinds of brains *means* three kinds of people. How could there not be a difference in these three kinds of brains if there are such differences in the three kinds of people, schizophrenics, depressed, and normals? And after seeing the different brain images, how could one not perceive a difference between these three “kinds” of people?<sup>163</sup>

In this passage, Dumit suggests a bidirectional relationship between public expectation of mental illness and the narratives of mental illness offered by brain scans. The scans are sufficiently distinct to imply definitive differences in the brains that yielded them, and these differences are congruent with the differences perceived between the labeled groups. Thus, the brain scans, in juxtaposition with one another, create new concepts of “kinds of brains” and validate existing notions of “kinds of people”. It should not be forgotten that the construction of a brain scan is theory-dependent. As I’ve outlined in chapter one, several decisions are made in the process of creating the brain scan images included as figures in scientific papers and media articles. The selected system of coloration, for example, determines how the relationships in brain activity will appear; therefore, any number of stories could have been told by the brain scans featured in the

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<sup>163</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 6.



Vogue article. It comes as no surprise that the chosen stories, where depressed brains are darkly shaded and schizophrenic brains blazing red, are consistent with existing cultural conceptions.

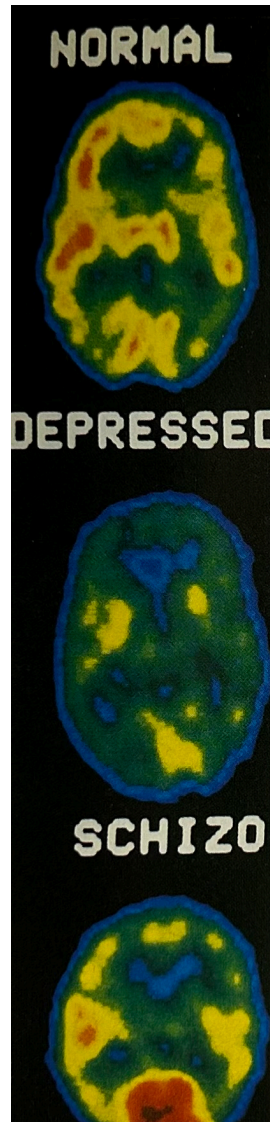


Figure 33: "Normal" versus "Depressed" versus "Schizo"

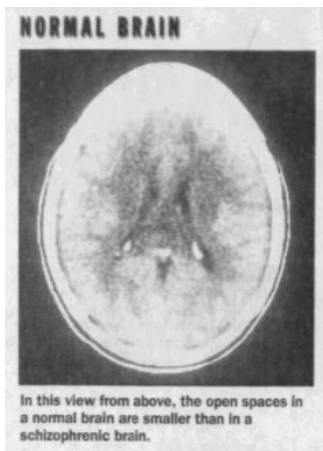
As neuroimaging technology gained prominence in scientific circles, brain scans continued to find their way into the news. The disparities between normal and diseased-state brains became a prominent representation of schizophrenia and other mental illnesses, even in articles aimed to

educate the public and push back on stigmatizing views. A 1994 article in the *Pittsburgh Post-Gazette* covered a university-affiliated scientist performing brain scan studies to learn how “brain activity differs between ‘normal’ people and those with schizophrenia” and included a diagram of the human brain with certain regions of the frontal cortex highlighted to indicate increased activity.<sup>164</sup> A good-natured article from Indiana, intended to better define mental illnesses, includes scans labeled NORMAL BRAIN and SCHIZOPHRENIC BRAINS, respectively (Figures 34 and 35).<sup>165</sup> While the figure captions included a brief summary of what differences were observed (namely, that the schizophrenic brains contained larger openings than the normal brains), the clinical significance of these differences remains clouded. The lay viewer is therefore left to draw their own conclusions about what the scans reveal. Given that brain volume is often colloquially associated with intelligence, the implications of gaping holes in schizophrenic brains are not a far leap. Additionally, there is something uncanny and even sinister about the dark spaces in the brains of schizophrenics. While the scans are not pseudo-colored with bright yellow and dark red, the difference in appearance between the normal brain (mostly white, with light shades of gray) and the schizophrenic brain (a pitch-black center, and comparatively darker) almost seems to offer a metaphor for the workings of the schizophrenic mind.

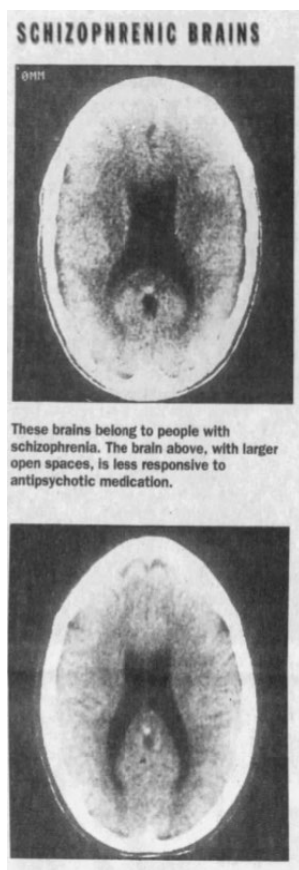
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<sup>164</sup> “Nov 28, 1994, Page 9 - Pittsburgh Post-Gazette at Newspapers.com.” n.d. Newspapers.com. Accessed March 11, 2024. <https://www.newspapers.com/image/88977054/>.

<sup>165</sup> “Sep 14, 1997, Page 64 - the Times at Newspapers.com.” n.d. Newspapers.com. Accessed March 11, 2024. <https://www.newspapers.com/image/303976457/?terms=schizophrenic%20brain&match=1>.



**Figure 34: "Normal" brain in an Indiana news article**



**Figure 35: "Schizophrenic" brains in an Indiana news article**

These patterns have continued into the twenty-first century. An editorial piece posted in the *Grand Rapids Press* in 2011 includes a series of five digitally-rendered brain scan recreations, one labeled “normal” and four labeled with different psychiatric diagnoses (Figure 36).<sup>166</sup> As with the *Vogue* article scans, these scans use color to create intuitive associations with the represented group. Depressed and bipolar brains are shaded dark blue, schizophrenic and obsessive-compulsive brains flare with red and orange hues, and the normal brain is represented with an assortment of colors to signify a healthy balance of emotions. Red is a recurring symbol for schizophrenia in popular brain scans. An article published in *The Guardian* includes PET-derived images to show changes in glial activation in schizophrenia, representing increased activation with warmer colors on the gradient (Figure 37).<sup>167</sup> An *MIT News* piece claims that overactivity of the “default” neural system is observed in both patients and their direct relatives; this overactivity was visualized, of course, by larger and brighter regions of red in the brain scans of these groups (Figure 38).<sup>168</sup>

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<sup>166</sup> “Editorial: How Changing Our Minds about Mental Illness Could Offer Hope.” 2011. Mlive. The Grand Rapids Press Editorial Board. June 12, 2011. [https://www.mlive.com/opinion/grand-rapids/2011/06/editorial\\_how\\_changing\\_our\\_min.html](https://www.mlive.com/opinion/grand-rapids/2011/06/editorial_how_changing_our_min.html).

<sup>167</sup> Mo Costandi. 2017. “Brain’s Immune Cells Hyperactive in Schizophrenia.” *The Guardian*. The Guardian. May 9, 2017. <https://www.theguardian.com/science/neurophilosophy/2015/oct/16/brains-immune-cells-hyperactive-in-schizophrenia>.

<sup>168</sup> “Altered Brain Activity in Schizophrenia May Cause Exaggerated Focus on Self.” n.d. MIT News | Massachusetts Institute of Technology. <https://news.mit.edu/2009/schizophrenia-0119>.

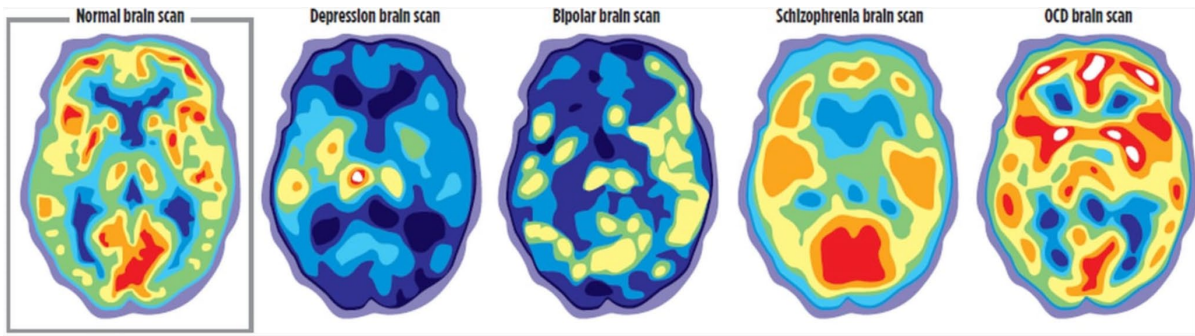


Figure 36: Artistic renderings of brain scans labeled with various psychiatric disorders

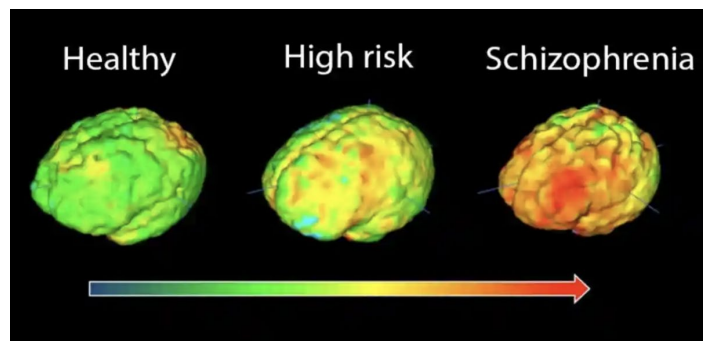


Figure 37: "Healthy" versus "High Risk" versus "Schizophrenia"

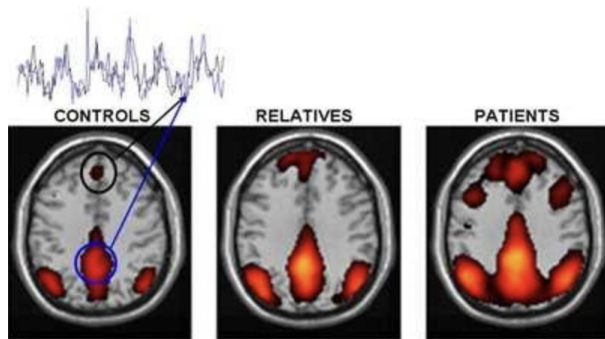


Figure 38: Brain scans showing hyperactivity in patients with schizophrenia and their relatives when compared to control brain scans

These choices are arbitrary and subjective; the data that underlie these scans could be represented with any color. Yet the resulting images tell a story that numbers never could, in which schizophrenic brains embody the cultural symbols and stereotypes that have separated individuals from the majority. It is unlikely that media outlets intentionally reinforce harmful stereotypes; in fact, the purpose of many of the referenced articles is to inform the public about a mental disorder that is frequently misunderstood. Neuroimages cause damage that is more subtle than the damage from depictions decades before. Rather than directly portraying individuals with schizophrenia as violent and deranged, the inclusion of brain scans indirectly uphold these misconceptions while facilitating a new label for schizophrenia in the public sphere: *scientifically abnormal*.

#### **4.5 And Yet: Advertisements, Television, and Film in a Biological Era**

It is often taken as a corollary that public attitudes towards mental illness improved as a direct result of the biological revolution.<sup>169</sup> The previous section revealed that stigmatizing views prevailed in news coverage despite scientific advancements, and in fact were even supplemented by certain neuroimaging figures given the bias in coloration. As I'll show in the current section, stigmas remained prevalent in several media industries through the turn of the century.

Advertisements, for example, still delivered harmful messages about individuals with mental illness. Promotional posters for Steven Spielberg's children's television series *Animaniacs*, which aired for the majority of the 1990s, included a character (uncoincidentally named "Wacko")

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<sup>169</sup> Schomerus, G., C. Schwahn, A. Holzinger, P. W. Corrigan, H. J. Grabe, M. G. Carta, and M. C. Angermeyer. 2012. "Evolution of Public Attitudes about Mental Illness: A Systematic Review and Meta-Analysis." *Acta Psychiatrica Scandinavica* 125 (6): 440–52. <https://doi.org/10.1111/j.1600-0447.2012.01826.x>.

who assumed a goofy pose and always had his tongue sticking out (Figure 39). As Otto Wahl has pointed out, it is evident from posters alone which of the animals Wacko is.<sup>170</sup> The long-running joke in commercials for the brand *Cocoa Puffs* is that the company’s mascot, Sonny the Cuckoo Bird, is unable to resist the cereal’s delicious “chocolatey taste”. The cartoon bird has been the face of the company since the early 1960s, and his trademark catchphrase “I’m cuckoo for cocoa puffs!” has continued into the 2010s.<sup>171</sup> Commercials depict the bird staring adoringly at a bowl with crazed eyes, bouncing off walls, and exclaiming that “being cuckoo sure has its ups and downs!” (Figure 40).



Figure 39: Promotional poster for Spielberg's *Animaniacs*

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<sup>170</sup> Wahl, *Media Madness: Public Images of Mental Illness*.

<sup>171</sup> “Cocoa Puffs.” 2022. Wikipedia. May 17, 2022. [https://en.wikipedia.org/wiki/Cocoa\\_Puffs](https://en.wikipedia.org/wiki/Cocoa_Puffs).



**Figure 40: Shot from a commercial for the cereal brand Cocoa Puffs featuring Sonny the Cuckoo bird staring at the cereal with crazed eyes**

Modern pharmaceutical companies have shown marked improvement in their marketing for psychotropic medications. Despite these changes, stigmatizing messages remain, albeit less overt, in many advertisements. The “Why I Fight” advertising campaign for the common antipsychotic medication Zyprexa, for example, employs a series of portraits intended to humanize the individuals their product is designed for and authenticate their experiences with mental illness.<sup>172</sup> However, a visual disparity is created between diagnoses. A put-together woman is shown in an office space (Figure 41); similarly, a groomed and clean-shaven man is featured in a warehouse (Figure 42). Both are described as suffering from bipolar disorder. A third poster, featuring a man at a bus station with disheveled hair, light scruff, and wide eyes, is explicitly targeted towards schizophrenia (Figure 43). While well-intentioned, this campaign continues a legacy in which individuals with schizophrenia are thought to be unkempt and incapacitated. Misshapen appearances are not the only trope to persist in contemporary pharmaceutical ads: a

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<sup>172</sup> “Zyprexa Ads.” n.d. Mysite. Accessed March 11, 2024. <https://www.timryandesigns.com/zyprexa-ads>.



poster for Latuda features an image of a man who is broken into several pieces, which is reminiscent of the representational drawings referenced earlier in the chapter.<sup>173</sup>



Figure 41: Zyprexa ad targeted at individuals with bipolar disorder



Figure 42: Zyprexa ad targeted at individuals with bipolar disorder

<sup>173</sup> Edwards, Jim. 2011. "Sunovion's New Schizophrenia Drug Ad Trashes the Patient - CBS News." [www.cbsnews.com. February 15, 2011. https://www.cbsnews.com/news/sunovions-new-schizophrenia-drug-ad-trashes-the-patient/.](http://www.cbsnews.com/news/sunovions-new-schizophrenia-drug-ad-trashes-the-patient/)



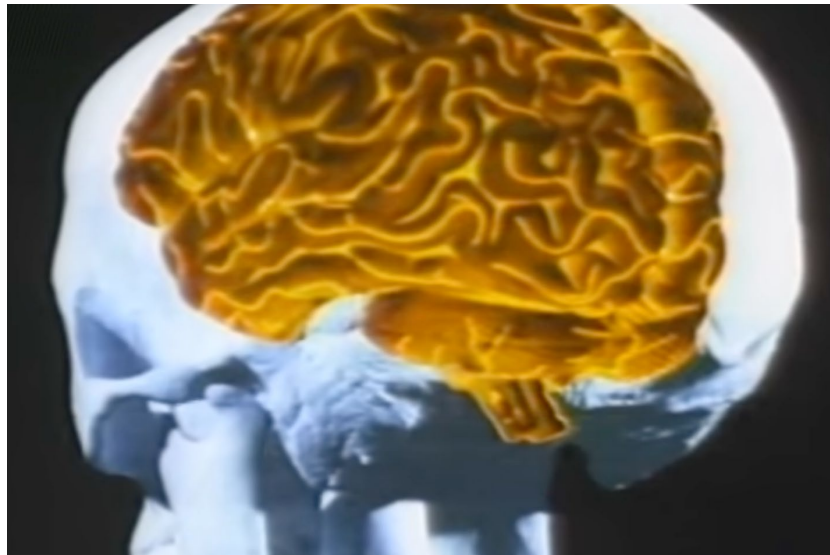
**Figure 43: Zyprexa ad targeted at individuals with schizophrenia**

Stigmas have endured in the entertainment industry as well, with new releases recycling many of the dangerous tropes that characterized mid-century television and film. While the distinction between pre- and post-biological eras of media are arbitrary, an important landmark in this transition is William Friedkin’s crime thriller film *Rampage* (1987). Thought to be the first Hollywood film to feature PET scans, *Rampage* follows a man named Alex who, over the course of the film, murders six people.<sup>174</sup> The film’s trailer includes a montage of brain images interwoven between violent crime scenes (Figure 44).<sup>175</sup> At the end of the film, while facing trial for these murders, the attorney insists on ordering PET scans of Alex’s brain to bring as evidence of his innocence by insanity. The judge is amenable to this request. Later, upon examination by a medical doctor, the brain scans are purported to reveal Alex’s schizophrenia:

<sup>174</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 150.

<sup>175</sup> “Rampage Trailer 1987.” n.d. [www.youtube.com](https://www.youtube.com/watch?v=GGgUww7XqVU). Accessed March 11, 2024.  
<https://www.youtube.com/watch?v=GGgUww7XqVU>.

These are abnormal patterns without a doubt... Well, this yellow-green area here is consistent with schizophrenia. What you are seeing is the computer-enhanced image of the chemistry of the brain. And what it shows is a picture of madness.<sup>176</sup>



**Figure 44: Shot of a brain from the trailer for *Rampage***

Once again, violence is associated with mental illness in fictional portrayals. Unique to *Rampage* is the employment of neuroimaging technology to legitimize this association. In Alex's trial, his violent actions have been explained by his alleged schizophrenia and confirmed by the abnormalities on a brain scan; in other words, the doctor localized the origins of Alex's violent murders to regions of a brain scan. Moreover, these brain scans are given diagnostic authority, portrayed as having the capacity to infallibly demonstrate the presence of mental illness. Dumit has argued that, in *Rampage*, the brain scan "...stands as a fact, the linchpin referent, that holds the

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<sup>176</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 151.

chain of connections together, convincing a jury that an abnormal brain scan is an abnormal brain is an abnormal person who does not bear responsibility for murder.”<sup>177</sup> Friedkin’s courtroom scene implicitly constructs two contentious relationships: first, between schizophrenia and violence, and second, between neuroimages and diagnostic truth. The effect of placing these relationships in conversation with each other is a false but persuasive conclusion that violent characterizations of individuals with schizophrenia are scientifically demonstrable.

Recent films, such as Martin Scorsese’s *Shutter Island* (2010)<sup>178</sup> and M. Night Shyamalan’s *Split* (2016)<sup>179</sup>, depict psychologically disturbed individuals as threatening. In contrast to the early psycho-killer films, which often treated mental illness as a monolithic justification for violent acts, psychological thrillers of the twenty-first century explore the depths of their antagonist’s minds. Modern filmmakers and producers capitalize on the general public’s curiosity about the motives behind gruesome crimes.

This trend has migrated into television as well: series such as *Criminal Minds* build their premises around “getting into the mind” of the killer by creating a profile based on clues from suspects’ lives and past experiences. Schizophrenia is frequently alluded to, often using the same degrading motifs that have discolored its media reputation for decades. In one episode from the first season, a man with schizophrenia takes hostages on a train after succumbing to his paranoia and command hallucinations. The FBI agents are left with no choice but to play along with his delusions, staging a procedure to remove a microchip implanted by the government for

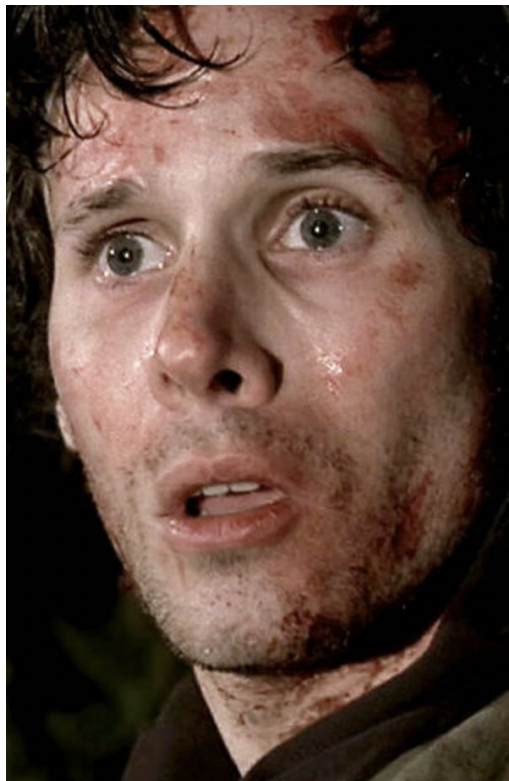
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<sup>177</sup> Dumit, *Picturing Personhood: Brain Scans and Biomedical Identity*, 151.

<sup>178</sup> Laeta Kalogridis, and Dennis Lehane. 2010. “Shutter Island.” IMDb. February 18, 2010.  
<https://www.imdb.com/title/tt1130884/>.

<sup>179</sup> Shyamalan, M. Night, M. Night Shyamalan, James McAvoy, Anya Taylor-Joy, and Haley Lu Richardson. 2017. “Split.” IMDb. January 20, 2017.  
[https://www.imdb.com/title/tt4972582/?ref\\_=nv\\_sr\\_srsg\\_0\\_tt\\_8\\_nm\\_0\\_q\\_spli](https://www.imdb.com/title/tt4972582/?ref_=nv_sr_srsg_0_tt_8_nm_0_q_spli).

surveillance purposes.<sup>180</sup> Just two episodes later, a schizophrenic killer was found to suffer from anthropophagy, a form of psychosis in which the individual believes they must engage in cannibalism. The episode features a scrubbed montage of the man panting and sweating, with blood lining his mouth (Figure 45).<sup>181</sup> In both episodes, as well as in several others, symptoms of mental illness are not merely plot devices to move the story along; rather, they are integral aspects of the narrative as the FBI agents attempt to understand the psychology of their suspects.



**Figure 45:** Close-up shot of a man with schizophrenia in the hit TV series *Criminal Minds*

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<sup>180</sup> Davis, Jeff. 2005. "Criminal Minds." S1E9.

<sup>181</sup> Davis, Jeff. 2005. "Criminal Minds." S1E11.

It is evident that many of the derogatory claims about schizophrenia were not left in the twentieth century. Advertisements and entertainment media continue to trivialize the experiences of mental illness, and often portray individuals as unkempt and dangerous. Biomedical investigations of the late twentieth century may have galvanized a deep public interest in the exploration of the psychotic brain and mind, but limited progress was made towards facilitating sympathetic portrayals of serious mental illness.

#### **4.6 Chapter Conclusions**

It is often claimed that the biological revolution significantly decreased the prevalence of stigmatizing public beliefs about mental illness. In this chapter, I've demonstrated that while there have been modest improvements in the way schizophrenia is conceived in the media, many of the misinformed and harmful themes have continued in contemporary representations, including depictions of individuals as comically crazy or violently psychotic. Moreover, the popularization and circulation of brain scans created a new way of representing differences between normality and abnormality which is undergirded by the authority of visual perception and scientific objectivity. In accordance with Gilman's claims, I propose that representations of these differences function to create and maintain an artificial separation between individuals with schizophrenia and those without to quell public anxieties about severe mental illness. Horror and amusement are two powerful methods of separation; the emergence of neuroimages led to the portrayal of individuals with schizophrenia as scientifically abnormal.

## 5.0 Conclusion

*When it gets right down to it, the medical model is an insult to me. To say that I have a diseased brain: it does not validate me.*

John Hood, quoted in Luhrmann and Marrow's *Our Most Troubling Madness*<sup>182</sup>

*Without science, there would be no such hope. No hope at all.*

Kay Redfield Jamison, *An Unquiet Mind*<sup>183</sup>

In this thesis, I have explored the rhetorical power and impact of neuroimages on contemporary scientific communication and public discourse with respect to schizophrenia. I began by describing two features of brain scans which underpin their scientific and cultural prevalence. As both intuitively readable visualizations and scientific figures, neuroimages contain a powerfully persuasive authority that stems from visual culture and perceived scientific objectivism; in the first chapter, I argued that this dually appointed authority facilitated the recent trends observed in the second and third chapters. In the second chapter, I recapitulated the history of contemporary scientific visualizations of schizophrenia, interweaving its story as a scientific and medical diagnosis from the late nineteenth century to the turn of the twenty-first. Here, I argued that in moments when biological psychiatry was gaining traction, technical reproductions were used to systematically observe the interior lives of individuals with mental illness that were

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<sup>182</sup> Luhrmann, T M, and Jocelyn Marrow. 2016. *Our Most Troubling Madness: Case Studies in Schizophrenia across Cultures*. Oakland, California: University Of California Press.

<sup>183</sup> Jamison, Kay R. 1995. *An Unquiet Mind: A Memoir of Moods and Madness*. London: Picador.

otherwise inaccessible in a biomedical framework. These took the form of photographs in the late nineteenth century and neuroimaging figures in the late twentieth century. I traversed to the public sphere in the third chapter, exploring how portrayals of schizophrenia changed in response to the rise of neuroimaging figures in the biological revolution. While it is often thought that stigmatizing views of schizophrenia and other forms of severe mental illness were alleviated by psychiatry's biological revolution, I have pushed back on this claim by demonstrating that both existing and novel stigmas persisted into the post-biological era. I emphasized two recurring themes, fear and humor, and explained that these were two effective means by which the public creates separation between themselves and individuals with schizophrenia. I argued that the circulation of brain scans in media platforms not only substantiated previous stigmatizing portrayals but also introduced a new stigmatizing trend of difference in the form of what I call scientific abnormality.

While my analysis has focused on how discourses and portrayals of schizophrenia have evolved through the biological revolution, it is crucial not to lose sight of the individuals who these evolutions most directly impact. The consequences of these shifting discourses are far from abstract; each trend I have described has real and lasting effects on the lived experiences of individuals living with a schizophrenia diagnosis. How individuals are viewed by science and popular culture can shape the way a person views themselves.

Consider the words of John Hood, a mental health advocate who carries a diagnosis of schizophrenia himself. The epigraph placed at the start of this chapter is taken from the first chapter of T. M. Luhrmann and Jocelyn Marrow's *Our Most Troubling Madness: Case Studies in Schizophrenia Across Culture*, which narrativizes John's journey with schizophrenia and explores the impact of social perception on his wellbeing.<sup>184</sup> John has made it quite clear that the biological

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<sup>184</sup> Luhrmann and Marrow. *Our Most Troubling Madness: Case Studies in Schizophrenia across Cultures*.



framework with which psychiatry is now approached offers him little consolation; in fact, the implications of this framework harm him. With the biomedical model comes the notion that a schizophrenic brain is broken, which for John is the worst label to receive: “When it comes down to it, there’s no greater stigma than the client thinking that his mind is diseased.”

A similar story is told in Elyn Saks’s *The Center Cannot Hold*, in which she provides her personal account of schizophrenia. Throughout her memoir, Saks details her battle not only with her illness, but with the medication prescribed to treat it:

I stayed on [Navane] for about ten days, got a lot of work done, then decided that while it was probably helpful, it was making me a little druggy, and besides, it probably wasn’t necessary. *I’ll take it when I get sick, but not for long; I don’t want to be drugged.* Within two days, I’d stopped altogether. I’d fooled them. Which of course raises the question: Fooled *whom?*<sup>185</sup>

Later, Saks adds:

In spite of my history, in spite of the diagnoses and the prescriptions, the frequent delusions and evil visitations... I still wasn’t convinced that I had a mental illness. Nor was I convinced I really needed medication. To admit to any of it was to admit that my brain was profoundly broken, and I just couldn’t do that. I couldn’t let others in on the secret, either.<sup>186</sup>

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<sup>185</sup> Saks, Elyn R. (2007) 2015. *The Center Cannot Hold: My Journey through Madness*. New York: Hachette Books, 193.

<sup>186</sup> Saks, *The Center Cannot Hold: My Journey through Madness*, 244.

In these passages, Saks recounts her difficulty in accepting the truth of her diagnosis. Taking medications meant acknowledging that her brain was abnormal and needed treatment to function correctly. For Saks, whose intellect and mental capacity is an important component of her job description as well as her personhood, this concession was especially harrowing. The reliance on medication represented definitive biomedical evidence of Saks' condition in much the same way that a neuroimaging figure signals one's status as scientifically abnormal. There is no refuting what one can see with their own eyes, nor what is considered objective scientific fact. Therefore, both the average citizen and the psychiatric patient can look at a set of comparative brain scans and understand that what separates the former from the latter is biologically real and essentially uncontestable.

This is not the whole story, however. Here is Kay Redfield Jamison, author of the memoir *An Unquiet Mind*, discussing the surge of neuroimaging studies:

There is a wonderful kind of excitement in modern neuroscience, a romantic, moon-walk sense of exploring and setting out for new frontiers. The science is elegant, the scientists dismayingly young, and the pace of discovery absolutely staggering. Like the molecular biologists, the brain-scanners are generally well aware of the extraordinary frontiers they are crossing. And it would take a mind that is on empty, or a heart made of stone, to be unmoved by their collective ventures and enthusiasms...

...After an inward snort about "normal comparison groups," I read on and found that, as usual in new fields of clinical medicine, there were far more questions than answers, and

it was unclear what any of these findings really meant... In a strange way, though, after reading through a long series of studies, I ended up more reassured and less frightened. The very fact that the science was moving so quickly had a way of generating hope, and, if the changes in the brain structure did turn out to be meaningful, I was glad that first-class researchers were studying them. Without science, there would be no such hope. No hope at all.<sup>187</sup>

Jamison, whose diagnosis of manic-depression (termed “bipolar disorder” today) informs her work as a clinical psychologist and researcher, found comfort in the brain scans she shared a label with. While acknowledging the limitations and ambiguity of such studies, the experience of seeing evidence of biological difference captured in the visual display of a neuroimaging figure was ultimately positive for Jamison – it meant that there was a way forward, a reason to stay hopeful. Hope can be a powerful force for individuals suffering from severe psychiatric illness for which no answers have been found, as Jamison has attested.

Can both accounts be accepted? Is it possible to advocate for advances in biomedical psychiatry while maintaining that these same advances have the potential to cause significant harm to the individuals they are intended to help? I contend that these positions are not incompatible; it is entirely possible to place faith in and engage with scientific inquiry while recognizing the implications that findings can have on the personhood of those who are represented in the data. The purpose of my thesis is to explore the effects of biomedicalization on how society interacts with severe mental illness and emphasize issues within scientific communication and popular

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<sup>187</sup> Jamison, *An Unquiet Mind: A Memoir of Moods and Madness*.

media that must be consciously addressed. This present work and others which examine the relationship between scientific progress and social life are useful in renegotiating the social landscape to become more inclusive to individuals with schizophrenia and other mental health diagnoses. Additionally, research which examine the personal experiences of those who carry diagnoses must be central to these efforts.

In this thesis, I hope to have convinced the reader that neuroimaging technology is an influential scientific tool which has potent rhetorical implications for both expert and lay audiences. My work examines the effect of neuroimaging's emergence on contemporary scientific and popular communication, but it is important to recognize that the effects of the biological revolution are being uncovered each day. New studies are being published, new movies are being produced, and new articles are circulating which explore schizophrenia and the brain. Therefore, we must continue to be conscious of how neuroimaging technology impacts the way we think about, talk about, and ultimately treat those with mental illness.

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