

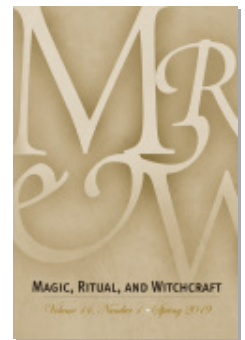


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Witchcraft and Psychosis:

Perspectives from Psychopathology and Cultural Neuroscience

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1. INTRODUCTION

In his book *Witchcraft, Intimacy, and Trust*, the social anthropologist Peter Geschiere—who has worked among the Maka people of southwest Cameroon since the early 1970s—relates the story of Jean Eba. Eba was a successful *fonctionnaire*—a civil servant and political operative—who in the late 1960s returned to his village: “Eba felt ill, his complaints were quite mysterious (general fatigue), and no doctor succeeded in curing him. So people soon started whispering about witchcraft. Apparently Eba himself shared this view, despite his Western education: after some hesitation he told me that he had begun to frequent one *nganga* (healer) after another. Finally a *nganga* from Djem country (some sixty miles away) succeeded in helping him, but insisted that he had to leave the village and return to one of the urban centers of the East.”¹ Local people interpreted this as an “attack from inside the house” as a result of jealousy from relatives he had not sufficiently helped, although different suspects and specific motives were identified.

The local interpretation of Eba’s difficulties is only one example of a wide range of beliefs and practices called “witchcraft” in different cultures and periods of history. What all these beliefs and practices share in common is the notion that affliction or misfortune can be intentionally caused by the special actions of a person, the witch. The story of Jean Eba also illustrates, however, how attributions of remote malefaction by ritual means are typically embedded in larger narratives that are characteristic of a society or social group. A narrative, as Esther Eidinow and Richard Gordon observe, is defined as “a spoken or written account of

1. Peter Geschiere, *Witchcraft, Intimacy, and Trust: Africa in Comparison* (Chicago: University of Chicago Press, 2013), 40.

connected events” in the *Oxford English Dictionary*.² As such, witchcraft narratives locate attributions of malefaction within a broader imaginary or conception of the world; they “may link individual, concrete situations to wider cultural and cosmological beliefs; select and frame social knowledge; assert the coherence of patterns of action; and orchestrate both moral concepts and mortal power, in interaction with other social structures and dynamics.”³

Locally distinctive features of these imaginaries resist the notion that there is a uniform phenomenon of witchcraft across cultures and periods of history. We can see this clearly in the articles in this volume. When analyzing narrations of magical power in ancient Egypt, for example, Svenja Nagel notes that while there was no indigenous concept of “witchcraft” in ancient Egypt,⁴ “there definitely are a number of powers and activities that closely resemble those labelled as ‘witchcraft’ in various other cultural and historical contexts.”⁵ In the case of Mesopotamia, Greta Van Buylaere considers how the cuneiform records of a male elite show a growing perceived threat by female ritual specialists from the second to early first millennium BCE, leading to their demonization as “witches” in anti-witchcraft rituals.⁶ In the case of Classical Athens, Esther Eidinow shows how uncertainty about causes of misfortune under the adverse social conditions following defeat in the Peloponnesian War led to the formation of a “family of ideas” linking a notion of dangerous women with ritual activities that were mistaken as potentially harmful—an early prototype of witchcraft beliefs.⁷

But despite their locally distinctive features, one of the key “family resemblances” or points of intersection across these and similar imaginaries is the very notion that affliction or misfortune can be intentionally

2. Esther Eidinow and Richard Gordon, “Introduction to the Special Volume” in *Narrating Witchcraft: Agency, Discourse, and Power*, this volume.

3. *Ibid.*

4. Svenja Nagel, “Narrations of Magical Power in Ancient Egypt or: A Counter-Narrative to ‘Witchcraft’-Concepts” in *Narrating Witchcraft: Agency, Discourse, and Power*, this volume.

5. *Ibid.*

6. Greta Van Buylaere, “The Decline of Female Professionals—and the Rise of the Witch—in the Second and Early First Millenium BCE,” in *Narrating Witchcraft: Agency, Discourse, and Power*, this volume.

7. Esther Eidinow, “Social Knowledge and Spiritual Insecurity: Identifying ‘Witchcraft’ in Classical Greek Communities,” in *Narrating Witchcraft: Agency, Discourse, and Power* (in press).

caused by occult ritual means. Consequently, understanding what motivates or influences causal attributions of intended harm potentially provides insights into constraints on the formation of witchcraft belief and narratives. Psychiatrists and psychologists are also confronted with beliefs that misfortune has special types of personal causation, but the people who express those beliefs are considered to be suffering from paranoid delusions, that is, unfounded but abnormally salient beliefs that others intend harm. Paranoid delusions include beliefs in witchcraft, along with a wide range of other notions of how harm can occur through the intentions and remote actions of a malefactor. If both paranoid delusions and witchcraft involve attributions of harmful intent, this raises the question of how the phenomena are related, and whether explanations of one can be informed by explanations of the other. In the case of paranoid delusions, biological and psychological models accept social influences on paranoia, but mainly emphasize the role of cognitive and neurobiological processes in the beliefs and actions of individuals. This raises the question of whether these levels of explanation are relevant to understanding witchcraft beliefs. Accounts of witchcraft, by contrast, have mainly emphasized social and cultural influences on the beliefs and behaviour of individuals. This raises the question of whether the cognitive and neurobiological processes known to influence paranoia can be more deeply linked to social and cultural processes—for example, cultural narratives relating to perceived threat, and the social conditions under which they occur. To consider these questions we will begin by discussing paranoia and delusions.

2. PARANOIA AND DELUSIONS

The fifth edition of the *Diagnostic and Statistical Manual of the American Psychiatric Association* (DSM-5) defines delusions as a “false belief based on incorrect inference about external reality that is firmly held despite what almost everyone else believes and despite what constitutes incontrovertible and obvious proof or evidence to the contrary.”⁸ The authors add that “the belief is not ordinarily accepted by other members of the person’s culture or subculture (i.e., it is not an article of religious faith).”⁹ They also observe that “the distinction between a delusion and a strongly held idea is sometimes difficult

8. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)* (Washington, D.C.: American Psychiatric Pub., 2013), 819.

9. *Ibid.*

to make and depends in part on the degree of conviction with which the belief is held despite clear or reasonably contradictory evidence regarding its veracity.”¹⁰

Critics have questioned the extent to which different aspects of the definition can be unambiguously applied in a given case. In practice it can be difficult to establish the falsity of a belief, the evidence for and against it, and the extent to which it would or would not be accepted by other members of a person’s culture or social group.¹¹ Nevertheless, the criteria contained in this definition of delusion remain central to diagnostic attempts to demonstrate that a belief is delusional.

There are different types of delusions, some of which are particularly associated with a specific psychiatric disorder or related set of disorders. For example, grandiose delusions (such as belief in fantastic personal wealth or importance) are typically associated with mania or hypomania, while nihilistic delusions (such that body parts have disappeared) or delusions of guilt (the person is responsible for all suffering in the world) are typically encountered in patients with severe depression.¹² In persecutory delusions, “the subject believes that someone, or some organization, or some force or power, is trying to harm him [*sic*] in some way: to damage his reputation, to cause him bodily injury, to drive him mad or to bring about his death.”¹³ As Freeman puts it, “In persecutory delusions the belief is that others *deliberately* intend to cause the harm.”¹⁴ The term *paranoia* is commonly used to describe ideas of persecution, and the related notion of ideas of reference in which coincidental or unrelated events are interpreted as having an important personal significance.¹⁵ Paranoia has also been used to refer to all types of delusional thinking; to a distinct diagnosis; and to general suspiciousness, but in the present context its reference to unfounded beliefs that a persecutor has a deliberate intention to cause harm is most relevant.¹⁶

10. *Ibid.*, 87.

11. Vaughan Bell, Peter Halligan, and Hadyn Ellis, “Beliefs about delusions,” *The Psychologist* 16, no. 8 (2003): 418–23.

12. Femi Oyeboode, *Sims’ Symptoms in the Mind: An Introduction to Descriptive Psychopathology* (Edinburgh: Elsevier Health Sciences, 2008).

13. J. K. Wing, J. E. Cooper, and N. Sartorius, *The Description and Classification of Psychiatric Symptoms* (London: Cambridge University Press, 1974).

14. Daniel Freeman, “Persecutory Delusions: A Cognitive Perspective on Understanding and Treatment,” *The Lancet Psychiatry* 3, no. 7 (2016): 685–92; emphasis in original.

15. Oyeboode, *Sims’ Symptoms in the Mind*.

16. Freeman, “Persecutory Delusions.”

A tradition of psychiatric thought dating back to the philosopher and psychiatrist Karl Jaspers emphasizes the differences between delusions and normal beliefs—for example, that unlike ordinary beliefs, delusions are held with abnormal conviction, unchanged by experience or argument, and often have bizarre or impossible content.¹⁷ Given this depth of change in belief, and associated changes in perception, feeling, and action, Jaspers “held that true delusions, in contrast to delusion-like ideas, are ununderstandable in the technical sense that they are inaccessible to empathy and therefore impossible to explain in terms of the patient’s background or personality.”¹⁸

Biological psychiatric research has attempted to understand factors distinguishing those at increased risk for severe mental disorder such as schizophrenia of which delusions typically form a part. Here the ununderstandability of delusions is explained as a pathological feature of severe mental disorder. The puzzling problem of how a person can come to believe the propositional content of a delusion is solved by viewing the content of the delusion, and the person’s intense belief in it, as a byproduct of cognitive and biological processes that have gone deeply awry. Patients and their mental processes are clearly set apart from ordinary psychology in keeping with a disease model of causation. In this approach for example, abnormalities of genes, transmitter systems, brain structure and function, influenced also by environmental insults ranging from psychosocial stress to drug taking, motivate delusions as symptoms of schizophrenia or other mental illnesses.

However, an alternative approach locates delusions and ordinary beliefs on a continuum.¹⁹ This implies that less severe forms of delusional ideas, or delusion-like ideas, should be present in the general population amongst people who do not come to the attention of psychiatrists. It also implies that processes contributing to belief formation in the general population are likely to contribute to the formation of delusions. In other words, delusions may be intelligibly linked at the levels of both meaning and causation to ordinary beliefs. However difficult it may be to understand why a person can hold unfounded and sometimes bizarre beliefs with such conviction, it should be possible to identify steps linking delusional beliefs to more commonplace ideas and attitudes. The continuum notion has been strongly emphasized in recent psychological research into delusion formation, much of which has

17. *Ibid.*, 99.

18. Richard P. Bentall et al., “Persecutory Delusions: A Review and Theoretical Integration,” *Clinical Psychology Review* 21, no. 8 (2001): 1143–92.

19. John S. Strauss, “Hallucinations and Delusions as Points on Continua Function,” *Archives of General Psychiatry* 21, no. 5 (1969): 581–86.

focused on persecutory delusions. As Freeman puts it, “a spectrum of severity of paranoia (unfounded thoughts that others are deliberately intending to cause harm) exists within the general population . . . The severest form of paranoia is persecutory delusions, when the ideas are held with strong conviction.”²⁰ All of these ideas involve a loss of trust in the perceived intentions of real or imagined others. The spectrum from persecutory ideation to frank delusions has been described as a “paranoia hierarchy.” Persecutory ideation may range from feelings of vulnerability, or thoughts that the world is potentially dangerous, through gradations to unshakeable convictions of severe threat involving conspiracies that may be known to the wider public.²¹

The thematic content of paranoid ideas and delusions is highly variable, and reflects cultural and biographical influences: “The imagined persecutors may be individuals known to the patient, ethnic or political groups such as Catholics or communists, or organizations such as the Freemasons or . . . intelligence services.”²² The susceptibility of some individuals to perceiving a threat through a variety of locally available notions has long been recognized. As Burton wrote in the *Anatomy of Melancholy*, “He does not venture alone, for fear he should meet the devil, a thief, be sick; fears old women as witches, and every black dog or cat he sees he suspecteth to be a devil, every person near him is maleficated, every creature, all intend to harm him.”²³

Contemporary research in Western societies has shown associations between paranoia and environmental factors such as poverty, poor physical health, lack of perceived social support, lack of social cohesion, and problem drinking.²⁴ Research principally led by clinical and cognitive psychologists has also sought to identify psychological causal influences on the emergence and maintenance of paranoid ideas. These causes have been termed “inus” conditions—“an insufficient but non-redundant part of an unnecessary but sufficient condition.”²⁵ In other words, in isolation each causal factor is neither necessary nor sufficient to motivate paranoid ideation, but is a “difference that makes a difference” with other relevant constraints that are jointly

20. Freeman, “Persecutory Delusions.”

21. Ibid.

22. Bentall et al., “Persecutory Delusions.”

23. Robert Burton, *The Anatomy of Melancholy*, eds. Thomas C. Faulkner, Nicolas K. Kiessling, and Rhonda L. Blair, 3 vols. (Oxford: Clarendon Press, 1989), quoted in Freeman, “Persecutory Delusions.”

24. Daniel Freeman and Philippa Garety, “Advances in Understanding and Treating Persecutory Delusions: A Review,” *Social Psychiatry and Psychiatric Epidemiology* 49, no. 8 (2014): 1179–89.

25. Ibid.

sufficient for paranoid ideas to emerge and persist. Identified causal factors include excessive worry, negative self-beliefs, anomalous experiences, poor sleep, reasoning biases, and safety-seeking behaviours.²⁶ These factors warrant further consideration given their potential relevance to understanding the conditions under which witchcraft attributions are made.

Worry is relevant because it maintains preoccupation with ideas of threat. Levels of worry predict the intensity and persistence of paranoia. *Negative self-beliefs*, often derived from adverse experience of others when growing up, contributes to a sense of inferiority and vulnerability. In turn this lowers the threshold for perceiving threat. *Anomalous experiences* encompass potentially wide-ranging disruptions in sensation, perception, and the normal sense and experience of selfhood associated with drug-taking, suggestive and dissociative processes, or psychotic states. The sense of anxiety and arousal attending such strange experiences tends to invite explanations in terms of threat posed by others. *Poor sleep* (such as insomnia, daytime sleep, nightmares) may maintain paranoia in several ways—for example, through negative emotions and worse regulation of mood, anomalous experiences, and cognitive effects which limit the concentration, flexibility of thought, and motivation needed to manage distressing ideas and experiences. *Reasoning biases* refer to styles of reasoning that are more common in individuals with paranoia, which reinforce interpretations that events reflect the harmful intent or actions of others. For example, patients with delusions show a lack of “belief flexibility,” whereby they do not consider alternative explanations for misfortune compared to control groups. Reduced data gathering leading to a “jumping to conclusions” reasoning style, and reduced analytic reasoning, are more common in patients with paranoid delusions and likely contribute to the maintenance of paranoid beliefs. *Safety-seeking behaviours* refer to defensive strategies such as avoidance of exposure to perceived threat. While they reduce anxiety in the short term, they help to maintain unfounded beliefs by reducing exposure evidence that disconfirms them—for example, that encountering a source of perceived threat does not result in harm.²⁷

The identification of psychological factors contributing to delusion formation and maintenance raises the question of how these processes are related to brain processes involved in beliefs and delusions. In fact, both disease and continuum models have converged on similar findings relating to the biological underpinnings of delusion formation, but with differing emphases. Specifically, the mesolimbic dopamine system has been implicated in the biology

26. *Ibid.* See paper for additional citations for each causal factor.

27. Freeman and Garety, “Advances in Understanding and Treating Persecutory Delusions.”

of psychosis (delusions and hallucinations) for decades. As Miller put it in 1976,

The process of acquiring the associations necessary for learning a conditioned response in an experimental animal depends on the presence of dopamine. In human schizophrenic patients, an excessive supply of cerebral dopamine may facilitate the acquisition of associations between 'units of information,' to the point where unrelated features are associated and treated as if they are meaningful combinations: this process can be terminated by administering dopamine antagonists.²⁸

This basic proposal has undergone substantial subsequent development.²⁹ Kapur's influential account of psychosis as a "disorder of aberrant salience"³⁰ begins by citing the "motivational salience" hypothesis of dopamine function, whereby the mesolimbic dopamine system is seen as involved in the "attribution of salience," a process whereby events and thoughts come to grab attention, drive action, and influence goal-directed behaviour because of their association with reward or punishment.³¹ Kapur proposes that in psychosis "patients develop an exaggerated release of dopamine, independent of and out of synchrony with the context. This leads to the assignment of inappropriate salience and motivational significance to external and internal stimuli."³² In this view, delusions arise when patients impose explanations on these experiences of aberrant salience in order to make sense of them, producing "insight relief," forming "a guiding cognitive scheme for further thoughts and actions." Hallucinations arise from "the abnormal salience of the internal representations of percepts and memories."³³

Antipsychotic drugs, through dopamine receptor blockade, work to dampen the aberrant salience of the internal representations that preoccupy the patient. By attenuating the salience of ideas and percepts, the patient has

28. Robert Miller, "Schizophrenic Psychology, Associative Learning and the Role of Forebrain Dopamine," *Medical Hypotheses* 2, no.5 (1976): 203–11.

29. Shitij Kapur, "Psychosis as a State of Aberrant Salience: A Framework Linking Biology, Phenomenology, and Pharmacology in Schizophrenia," *American Journal of Psychiatry* 160, no. 1 (2003): 13–23; G. K. Murray, "The Emerging Biology of Delusions," *Psychological Medicine* 41, no. 1 (2011): 7–13; Oliver D. Howes and Shitij Kapur, "The Dopamine Hypothesis of Schizophrenia: Version III—the Final Common Pathway," *Schizophrenia Bulletin* 35, no. 3 (2009): 549–62.

30. Kapur, "Psychosis as a State of Aberrant Salience."

31. *Ibid.*, 14.

32. *Ibid.*, 12.

33. *Ibid.*, 16.

an opportunity to “work through” her symptoms toward a psychological resolution.³⁴ He continues: “Symptom resolution may have much in common with the mechanisms whereby all humans give up on cherished beliefs or frightening dreads, and it may involve processes of extinction, encapsulation, and belief transformation—fundamentally psychological concepts.”³⁵

This approach exemplifies a “two factor” account of delusions, in which perceptions and ideas invested with abnormal salience linked to dysregulated dopamine physiology crystallize into delusions through additional reasoning processes.³⁶ Some individuals develop anomalous experiences and preoccupying ideas—the so-called “prodromal” or “at-risk” state—but interpret the experiences as abnormal mental states rather than as grounded in reality. For example, not everyone who experiences hallucinations develops delusions to interpret them.³⁷ In those who do develop delusions, problems with probabilistic rather than logical reasoning appear to be most implicated as noted above.³⁸ The persistence of delusions as “cognitive habits” may not be associated with any specific neuromodulatory abnormality. Alternatively, dampening down the salience of underpinning associations and perceptions with antipsychotic medication may facilitate reappraisal and recovery.³⁹

Several implications follow from these attempts to link biological and psychological accounts of how human beings develop intensely held yet unfounded beliefs that others intend harm (amongst other unfounded beliefs and abnormal perceptions):

(i) Both the biological and the psychological continuum models posit a role for dysregulated mesolimbic dopamine transmission in delusion formation. While the most recent versions of the dopamine hypothesis of schizophrenia link different symptom clusters in schizophrenia (“positive”

34. *Ibid.*, 17.

35. *Ibid.*

36. Murray, “Emerging.”

37. Iris E. C. Sommer et al., “Healthy Individuals with Auditory Verbal Hallucinations; Who Are They? Psychiatric Assessments of a Selected Sample of 103 Subjects,” *Schizophrenia Bulletin* 36, no. 3 (2008): 633–41.

38. P. A. Garety, D. R. Hemsley, and S. M. R. C. Wessely, “Reasoning in Deluded Schizophrenic and Paranoid Patients: Biases in Performance on a Probabilistic Inference Task,” *Journal of Nervous and Mental Disease* 179, no. 4 (1991): 194–201; Gareth, Owen, John Cutting, and Anthony S. David, “Are People with Schizophrenia More Logical than Healthy Volunteers?” *The British Journal of Psychiatry* 191, no. 5 (2007): 453–54.

39. Murray, “The Emerging Biology of Delusions.”

symptoms such as delusions and “negative” symptoms such as apathy) to subsystems of dopamine physiology, they continue to posit a necessary causal link between abnormal hyperdopaminergia and delusion formation.⁴⁰ Current cognitive psychological continuum models view mesolimbic dopamine dysregulation and associated anomalous experiences as not necessary but potentially part of a sufficient set of causes for delusions to emerge (“inus” conditions).⁴¹ Yet all of this raises the question of what role the mesolimbic dopamine system plays in culturally normative belief acquisition and maintenance. Reverse engineering Kapur’s proposal about the psychotic patient who develops “an exaggerated release of dopamine, independent of and out of synchrony with the context,”⁴² the question here concerns what effects dopamine release has on beliefs and other aspects of cognition when it is “dependent on” and “in synchrony” with social context.⁴³ I have previously proposed that the orchestration of reinforcing cognitive-symbolic and sensory-affective stimuli in cultural displays such as ceremonial ritual, as well as more routine social interaction, invest culturally shared ideas, objects, and actions with significance, memorability, and motivational force partly through activation of the mesolimbic dopamine system.⁴⁴ The embedding of ideas that others intend harm in narratives, symbolic actions, cultural displays, and routine social interaction would therefore be expected to inculcate them as interpretive dispositions in members of a social group not only because the ideas are communicated but also because they are emotionally inflected. A further question arises as to whether certain types of attribution—such as personal causal attributions that others intend harm—acquire cognitive prominence because they inherently engage mesolimbic dopamine activity more than alternative attributions, such that misfortune has impersonal or non-agentive causes. In other words, certain types of idea may differentially engage arousal systems, contributing to differences in cognitive salience and cultural transmission. Alternatively, emotional arousal—such as under conditions of social conflict and stress—may potentiate mesolimbic dopamine activity which in turn may lower the threshold for congruent ideas and attributions to be mobilized—including the notion that others intend harm.

40. Murray, “The Emerging Biology of Delusions”; Howes and Kapur, “The Dopamine Hypothesis of Schizophrenia.”

41. Freeman, “Persecutory Delusions.”

42. Freeman, “Persecutory Delusions.”

43. Quinton Deeley, “The Religious Brain: Turning Ideas into Convictions,” *Anthropology & Medicine* 11, no. 3 (2004): 245–67.

44. *Ibid.*

Here, understanding the social and cultural conditions under which witchcraft accusations flourish may provide insights into the reciprocal relations between social context and practice, cognition, and—potentially—brain function. Clearly, a key issue concerns how dys-regulation should be distinguished from regulation of the dopamine system—an issue that we will return to in light of discussion of witchcraft.

(ii) Both biological and cognitive psychological “continuum” models emphasize the importance of reasoning biases in differentiating initial cognitive and experiential changes into formed delusions. Cultural constraints on cognition, including belief formation and reasoning, have been a particular focus of social anthropology and its subsidiary branch of cognitive anthropology since the inception of anthropology as an academic discipline in the nineteenth century. This includes research on the types of reasoning involved in witchcraft. Historical research on witchcraft has also treated the question of how people can come to believe in witchcraft as a historical problem to be addressed through meticulous reconstruction of broader systems of ideas, narratives, social practices, and contexts. This raises the question of whether models of reasoning styles implicated in witchcraft beliefs can inform understanding of paranoia in the clinical sense. To address these questions, we will turn to witchcraft.

3. WITCHCRAFT

What is witchcraft? It is in origin an English word extended to describe apparently similar phenomena in different societies and periods of history. Central to any such usage is the notion that affliction or misfortune can be intentionally caused by the special actions of a person, the “witch.” As the social historian Keith Thomas wrote of witchcraft in England in the premodern period (sixteenth and seventeenth and centuries),

The belief in witchcraft can be defined as the attribution of misfortune to occult human agency. A witch was a person of either sex (but more often female) who could mysteriously injure other people. The damage she might do—*maleficium* as it was technically called—could take various forms. Usually she was suspected of causing physical injury to other persons, or of bringing about their death. She might also kill or injure farm animals or interfere with nature by preventing cows from giving milk, or by frustrating such domestic operations as making butter, cheese or beer. There was a wide range of other possible hostile actions, but in England a witch’s alleged activities usually came under one of these heads.⁴⁵

45. Keith Thomas, *Religion and the Decline of Magic: Studies in Popular Beliefs in Sixteenth and Seventeenth-Century England* (London: Penguin UK, 2003 [1971]), 519.

The witch could exercise occult power in a variety of ways:

Sometimes her evil influence was conveyed through physical contact: the witch touched her victim or gave out a potent, but invisible, emanation from her eyes. In this case he was said to have been 'fascinated' or 'overlooked.' Alternatively, the witch pronounced a curse or malediction which in due course took effect. Here the victim was said to have been 'forspoken.' Rather less common was the witchcraft which involved technical aids—making a wax image of the victim and sticking pins in it, writing his name on a piece of paper and then burning it, burying a piece of his clothing and so forth. In general contemporaries seem to have been less interested in the mechanics of the operation than in the fact of the witch's malice.⁴⁶

Yet the term "witchcraft" has been applied to such a wide range of beliefs and practices in different cultures and periods of history that the possibility of providing a fixed definition of the term has been questioned. However, as with other universalized categories of the social sciences, such as religion, ritual, democracy, or law, resemblances rather than strict equivalence between instances can be used to identify shared or typical features, as well as form a basis for understanding local particularity. In fact, one of the recurrent features of witchcraft may be its heterogeneity, that is, how specific instances can hold together evolving and not always fully integrated notions of how harm can be inflicted by another.⁴⁷ For example, Thomas also notes of premodern English witchcraft:

Many contemporary theologians . . . would not have agreed that the essence of witchcraft lay in the damage it did to other persons. For them witchcraft was not malevolent magic as such, but a heretical belief—Devil-worship. The witch owed any power she might possess to the pact she had made with Satan; and her primary offence was not injuring other people, but heresy. The lawyer, Sir Edward Coke, accordingly defined a witch as 'a person that hath conference with the Devil, to consult with him or to do some act.' Around this notion was built up the extensive concept of ritual Devil-worship, involving the nocturnal Sabbath at which the witches gathered to do homage to their master and to copulate with him.⁴⁸

46. Ibid.

47. Geschiere, *Witchcraft, Intimacy, and Trust*.

48. Keith Thomas, "The Relevance of Social Anthropology to the Historical Study of English Witchcraft" in *Witchcraft Confessions and Accusations*, ed. Mary Douglas (London and New York: Routledge, 1970), 49.

Other regions in premodern Europe also held partially overlapping but nonetheless distinct notions together in their concept of witchcraft.⁴⁹

The social anthropologist Peter Geschiere, in his book *Witchcraft, Intimacy, and Trust*, has argued that the variability and indeed dynamism of witchcraft notions and practices are integral to their existence. In his work with the Maka people of southwestern Cameroon, which began in the early 1970s, he traces the rapid and ongoing changes in witchcraft notions not only locally, but regionally, nationally, and even internationally. Geschiere observes that

in many of the parts of the world—certainly in Africa, but also elsewhere—this Western term has been eagerly appropriated by the public . . . In the African contexts where I have worked people use the term—or its French equivalent *sorcellerie*—to address an all-pervasive presence that covered all sorts of occult dangers and fears, surpassing local distinctions and demarcations.⁵⁰

In this period improved communication, migration, and media access have led to much wider dissemination of notions of occult power and danger. This has transformed the earlier ethnographic situation of societies that were more geographically, socially, and informationally contained. In Geschiere's words, "witchcraft is not a traditional given but a historical phenomenon; the particular and highly varying forms it takes in the African continent are shaped by deep historical changes in which colonisation and the ensuing global power relations are central."⁵¹

Despite the regional changes, Geschiere accepts that there are commonalities in witchcraft notions across societies. As he notes, "On other continents as well the basic image of 'witches' as people who have acquired the ability to transform themselves, leave their bodies at night, and fly off to nocturnal meetings in order to engage in horrible conspiracies is surprisingly general."⁵² He also observes that a recurrent feature of witchcraft imaginaries is that "witches most often find their victims in their close surroundings. The exact form of proximity may vary—in some settings it may concern, for instance, neighbors rather than relatives; or the sorcerer may be an outsider who works

49. Alison Rowlands, *Witchcraft Narratives in Germany: Rothenburg, 1561–1652* (Manchester: Manchester University Press, 2010), 11.

50. Geschiere, *Witchcraft, Intimacy, and Trust*, xviii.

51. *Ibid.*, xiii.

52. *Ibid.*, xvi.

for an ally within—but there is almost always a link with intimacy in some form.”⁵³

The dynamics of witchcraft can be illustrated with an example from Geschiere’s work with the Maka. He recounts how when he started his fieldwork, which he had wanted to be about politics, “my spokespersons invariably began to refer to the powers of the *djambe*. Clearly to them, any form of power—whether of the village chief and the old notables in the village council, or the authority of the family elders (women included) within their own household—was related to the *djambe*. They translated this term as *sorcellerie* in French (or even used the word *sorcellerie* while speaking Maka, the local language).”⁵⁴ He explains how

people described the *djambe* as a nasty creature living in someone’s belly which gives its owner (*djindjamb*—a person who took the trouble to develop his or her *djambe*) special powers. The main power is the capacity to transform oneself into an animal or a spirit. Especially at night when the owl calls, the *djindjamb* will leave his or her body and fly off into the night—‘along the cobwebs of the *djambe*’—to the *shumbu*, the nightly meeting of witches. There terrible cannibalistic banquets are staged. Stories of the debaucheries of these nightly meetings—marked by shocking transgressions, violent encounters, and devious victories—are many. But one element recurs in them all: each *djindjamb* has to offer a relative to be devoured by the other witches; in daily life the victim of this nightly treason will fall ill and die unless people call in the *nganga* (healer) to ‘see’ the guilty witches and force them to lift their spell. Basic to Maka discourse on the *djambe* is that it is about the betrayal of one’s kin to outsiders.⁵⁵

The *djambe* can be used in other ways too. *Nganga* (healers) have strong *djambes* that allow them to detect and counter witches. The *djambe* can be used in positive ways to heal, and to win wealth and power. However, “there is always the danger that the basic instinct—that of betraying and cannibalizing one’s relatives—will break through. For this reason the *nganga* remains a dangerous and potentially suspect person”—despite their protestations that their “professor” has bound them under strict oaths to heal and not to kill.⁵⁶

Geschiere observes how “it seemed to be self-evident among my Maka friends that ‘witchcraft from inside the house’ (*Djambe Ndjaw*) was the most

53. Ibid.

54. Ibid., 3–4.

55. Ibid., 4.

56. Ibid.

dangerous kind.”⁵⁷ We have already considered the case of Jean Eba, a successful Maka *fonctionnaire* who developed a mysterious illness after his return to the village in the late 1960s. Local people interpreted this as an “attack from inside the house” as a result of jealousy from relatives he had not sufficiently helped, although different suspects and specific motives were identified. The attack was understood to have conformed to the local pattern, occurring at the *shumbu*, the nightly meeting of witches wherein each witch offers a relative to be eaten by the others. Eba would have died had he not consulted a powerful *nganga*. Geschiere comments that “the elites felt swamped by all these requests [for assistance]. Hence their complaint that they were ‘eaten’ by their ‘brothers’—a direct reference to the ‘eating’ of the witches at the nightly *shumbu*.”⁵⁸

Twenty years later, Eba’s cousin Simon Mbang, another successful *fonctionnaire*, decided to return to the village when he reached retirement. After some years he was accused by a healer of bringing a new form of urban witchcraft, *kong*, to the village—a form especially associated with the conspicuous wealth and ostentation of the *nouveaux riches*. Mbang lodged a complaint for defamation in a court of the local administrative center. The court quickly ruled in his favor, the speed of the judgment reflecting his contacts. A heavy fine was imposed on his accuser, who disappeared the next day. However, members of Eba’s side of the family believed the accusation, hinting that Mbang had used his special powers to advance his own children but block others in the family. The two sides of the family cut ties. Geschiere comments on how the two cases illustrate the tensions between urban elites and the villages, as well as between kin, reflecting growing social inequalities and spatial scales of life for the Maka along with many other African communities. He observes how numerous innovations in witchcraft beliefs have arisen in tandem with these extraordinary new social and economic inequalities and pressures. These include new versions of belief in zombie witchcraft, where family members are no longer eaten but put to work on invisible plantations to amass great wealth for the witches; and *feyman*, confidence tricksters operating nationally and internationally, whose sometimes fantastic wealth and success are attributed to witchcraft. Geschiere comments that “even African migrants in Europe and America fear the telephone calls from home with their endless demands undergirded with hidden threats. The association of family with witchcraft as a serious threat for migrants far away from home shows the impressive stretching capacity of the family-witchcraft complex.”⁵⁹

57. *Ibid.*, xvi.

58. *Ibid.*, 41.

59. *Ibid.*, 22.

Geschiere identifies numerous factors involved in the innovation, and perhaps even intensification, of witchcraft beliefs and practices in Cameroon and other African societies. While the established churches tended to deny the reality of witches, newer forms of Pentecostal Christianity have strongly emphasized witchcraft and equated it with the Devil, along with a focus on miracles and prosperity through prayer and faith.⁶⁰ The net effect may have been to reinforce the perceived reality, salience, and power of witchcraft. Geschiere also notes the effect of the relative absence of institutions buffering individuals and families from rapid social and economic change:

Why do people refer to modernity in a way that makes it seem closely linked to witchcraft? . . . In many parts of Africa, the forces of modernity—the world market, state formation, and the development of industry, but also education, modern health-care, and new religious movements—affect the private sphere of the family in the home. Intermediate institutions that could mitigate the impact of such global forces seem to be relatively ephemeral and little developed in most African contexts.⁶¹

In this respect, it is notable that historical studies have shown the importance of local institutions in managing witchcraft accusations in communities which accepted this possibility, often (but not always) with the effect of discouraging them.⁶² In the English context, Thomas notes how the repeal in 1736 of the Witchcraft Act of 1604 followed growing skepticism about the possibility of witchcraft in the later seventeenth century amongst the educated classes, and greater reluctance of judges and juries to convict. In the countryside, however, witch beliefs persisted, although “the abolition of the Witchcraft Act meant that the possibility of formal accusation was no longer open. Instead, villagers turned to informal violence, counter-magic, and the occasional lynching.”⁶³ One such case was that of Ruth Osborne in 1751, accused of witchcraft and lynched by a Hertfordshire mob after the mysterious illness of a farmer who refused her request for buttermilk. Yet the authorities now treated acts of violence of this kind as murder. In fact, Thomas argues that lack of institutional support for witchcraft accusations, and legal penalties for acting outside the law against witches, contributed to their broader decline.

60. *Ibid.*, 90.

61. *Ibid.*, xxvii.

62. Rowlands, *Witchcraft Narratives in Germany*.

63. Thomas, *Religion and the Decline of Magic*, 73.

4. WITCHCRAFT THROUGH THE LENS OF PARANOIA

If witchcraft and paranoia both involve attributions that others intend harm, to what extent do causal accounts of one apply to the other? Witchcraft can be viewed through the lens of paranoia by considering further examples of what Rowlands termed “the social and psychic tensions that lay behind the making of witchcraft accusations and confessions.”⁶⁴ These tensions can be illustrated by Thomas’s analysis of patterns of English witchcraft accusation in the premodern period (sixteenth and seventeenth centuries). Thomas particularly emphasized situations where witchcraft accusations arose

when the victim (or his parents) had turned away empty-handed an old neighbour who had come to the door to beg or borrow some food or drink, or the loan of some household utensil[. . .] [She] was sent away, perhaps mumbling a malediction, and in due course something went wrong with the house or with one of its members, for which she was immediately held responsible. The requests made by the witch varied, but they were usually for food or drink—butter, cheese, yeast, milk or beer. Sometimes she asked for money or a piece of equipment. In all cases denial was followed by retribution, and the punishment often fitted the crime. Thus at Castle Carey around 1530, Isabel Turner denied Christian Shirston a quart of ale, whereupon ‘a stand of ale of twelve gallons began to boil as fast as a crock on the fire.’ Joan Vicars would give her no milk, and thereafter her cow yielded nothing but blood and water. Henry Russe also refused her milk, only to find himself unable to make cheese until Michaelmas.⁶⁵

In Thomas’s view witchcraft accusations in premodern England were typically made in the context of social conflicts arising from disparity of resources, and the attendant emotional conflict and ambivalence that arose in those from whom requests for assistance were made by indigent members of the community. For the present purpose the key point is the link between a form of recurrent social conflict and the making of an accusation, even if this was not the only situation of social conflict under which witchcraft accusations were made.

Consider now the case of the *nyongo* phenomenon, a particularly dreaded form of witchcraft amongst the Bakweri people of western Cameroon studied by the Oxford social anthropologist, Edwin Ardener.⁶⁶ Ardener’s account

64. Rowlands, *Witchcraft Narratives in Germany*, 1.

65. Thomas, *Religion and the Decline of Magic*, 62.

66. Edwin Ardener, “Witchcraft, Economics, and the Continuity of Belief” in *Witchcraft Confessions and Accusations*, ed. Mary Douglas (London and New York: Routledge, 1970), 141–60.

of the relationship of *nyongo* to social and psychological tensions is striking because he was able to track the emergence and fluctuation of this set of beliefs within the colonial and postcolonial situation of the Bakweri over many decades. The belief itself involved the following key ideas:

A person with *nyongo* was always prosperous, for he was a member of the witch association that had the power of causing its closest relatives, even its children, to appear to die. But in truth they were taken away to work for their witch-masters on another mountain sixty or seventy miles to the north: Mount Kupe in the territory of the Bakossi people. On Mount Kupe, the *nyongo* people were believed to have a town and all modern conveniences, including . . . motor lorries. *Nyongo* people could best be recognized by their tin houses which they had been able to build with the zombie labour force of their dead relatives. How this belief grew up, and by what processes the association of dying children and the ownership of tin houses became so firmly fixed, cannot easily be traced. But by 1953 the belief had taken such a hold that no one would build a modern house for fear of being accused of possessing *nyongo*.⁶⁷

Indeed, Ardener comments that at this point in time “there is no doubt that all ‘economic’ initiative was much affected by the climate of that belief.”⁶⁸

Nyongo emerged in the context of declining fortunes for the Bakweri. Before the German conquest of 1894, the Bakweri had enjoyed a period of relative prosperity following the introduction in 1845 of a new food crop, the *Xanthosoma* cocoyam, by a small missionary settlement. Prosperity and influence was further increased by trade with the coast and the acquisition of flintlock firearms. Following German conquest, Bakweri settlements were re-organized to allow large plantations, and migrant labor came to outnumber the locals. Prosperity declined and reproductive rates fell, while poverty increased and sexually transmitted diseases spread from the involvement of Bakweri women in prostitution for migrant labor. Within this context belief in *nyongo* appeared, most likely as an import in many of its details. Several lines of evidence suggest its origin outside Bakweri society. The name is derived from a word in the neighboring Duala language; the zombie town is located amongst another tribe in a mountain the Bakweri may not have known about before the colonial period; and the belief in zombies, though common in East and Central Africa, was not common in West Africa at this

67. *Ibid.*, 147.

68. *Ibid.*, 148.

time.⁶⁹ Nevertheless, Ardener points out that the use of a Bantu word, *somba*, to describe pledging a relative for *nyongo* is the root of the word *zombie* in the Caribbean and may indicate an earlier notion not explicitly recalled by the Bakweri—even if the point of transmission across the Atlantic was from another part of Africa.⁷⁰

Ardener summarizes the social crisis within which belief in *nyongo* appeared as involving

powerful ambivalence towards riches and property; the sudden breach of the isolation of the society, accompanied, as is all too commonly the case with the victims of decline in power or status, by a sense of collective guilt; the low fertility, and the fear of dying out. Perhaps all this turned against those who were thought to have benefited by the events which had caused so much damage. Envy, disaster, property, and witchcraft were once more in close association.⁷¹

In fact, Ardener observed an inverse correlation between economic prosperity and the *nyongo* phenomenon, noting also that ritual action to address *nyongo* altered economic behaviour. In 1954, educated Bakweri and government officials introduced commercial banana farming. Critically, the villages themselves were organized as cooperatives rather than on an individual basis, so that all would gain. This occurred in the banana boom of the fifties, and the first full year (1953) brought great prosperity. Ardener describes how

sums of the order of £100 per farmer entered Bakweri villages, with their tumbling huts and empty tin houses. By common tacit consent the making of small improvements, such as cementing a floor, began to be taken as not necessarily of *nyongo* origin. Then, in 1955 and 1956, a masked figure called *Obasi Njom* began to glide about the villages. Bakweri villages had used over £2,000 of the first banana revenue to purchase the secrets of a witch-finding association from the remote Banyang tribe. With the new advanced ritual technology they began to clear the *nyongo* witchcraft from the villages[. . .]with the *nyongo* threat removed, obviously the next revenue could be spent on self-advancement, and yes, even on tin houses.⁷²

However, by 1960 for a variety of reasons the banana market weakened and the village co-operatives started to lose money, which was accompanied

69. Ibid.

70. Ibid., 149.

71. Ibid.

72. Ibid.

by more adverse political conditions for the Bakweri. By 1963 the peasant economy was at a lower level than the boom time of the end of the fifties, but not at the level of the sixty-year period from 1894–1954. In 1963 a rumor spread from Bakweri villages on the mountains that the elders had forbidden money to be picked up from the ground since it was placed there to entice men to the waterside: “There, ‘Frenchmen’ would use them to work as zombies on a new deep sea harbor, or use them to appease the water spirits.”⁷³ In other words, economic downturn and increased social stress were accompanied by reactivation of *nyongo*-like ideas, even though the Bakweri maintained that the old *nyongo* spirits continued to be exorcized.

Overall, the examples from the Maka, Bakweri, and premodern England considered here illustrate a consistent conclusion from ethnographic and historical research that witchcraft preoccupations and accusations are more prominent under conditions of social and psychological stress. To what extent, then, do causes of paranoid attributions also contribute to witchcraft accusations? As an initial observation, paranoid attributions—like witchcraft accusations—are more common under conditions of social and psychological stress.⁷⁴ Psychological processes that research has shown to mediate the relationship between paranoia and stress are also evident in witchcraft examples, with variation in how the causal factor operates reflecting specific features of each case.

Worry, which maintains preoccupation with ideas of threat, might more appropriately be termed fear or even dread in the case of witchcraft. Gradations of fear, anxiety, and worry are present in the examples of Maka witchcraft, the threat of retaliation perceived by those who refused assistance to indigent neighbors in premodern England, and the Bakweri who dreaded becoming *nyongo* slave labor. The sense of fear is of course based on a prior belief in the possibility of witchcraft, but when the belief is present and the circumstances are fitting, fear intensifies preoccupation and perceived threat.

Versions of *negative self-belief*, which in the case of paranoia contribute to a sense of inferiority and vulnerability, appear to be present in some cases of those making witchcraft allegations. Perhaps the clearest instance in the examples cited here is the sense of guilt in those who refused assistance to poor neighbors in premodern England, which underpinned their sense of vulnerability to retaliation by witchcraft. More generally, cases of witchcraft

73. *Ibid.*, 154.

74. E.g., Freeman and Garety, “Advances in Understanding and Treating Persecutory Delusions.”

attributions occurring in the context of low mood or other forms of psychological distress raise the question of individual vulnerability to what in secular psychiatric terms would be considered depression or other common mental illnesses. Negative self-belief is a risk factor for depression as well as paranoia. Depression arising in the context of feelings of inferiority may therefore be accompanied by a sense that others intend harm, or a belief that the psychological distress is itself a product of harm caused by another—for example, through witchcraft in societies which endorse this possibility. Nevertheless, the examples considered here show how the link between self-beliefs, perceived “inferiority” and vulnerability to harm by others are linked to local patterns of social relations. For example, Bakweri who believed themselves to be at risk of *nyongo* by unaccountably prosperous relatives may have had a sense of economic or social inferiority, linking the sense of inferiority and vulnerability to envy. Unlike the indigent women of premodern England, it is those who are successful who are most at risk of witchcraft accusations. Yet the successful in African contexts can also be victims of witchcraft. Jean Eba, a successful *fonctionnaire* who returned to his Maka village to live amongst less prosperous relatives, attributed his unexplained fatigue to witchcraft. Consequently, the sense of paranoia—the sense of being vulnerable to attack by others—seems to be most associated with relative accentuations of social dominance and subdominance.⁷⁵ How negative emotions and perceived vulnerability to attack are linked to unequal social relations must therefore be understood in relation to specific contexts, belief systems, and their articulation in narratives.

What in secular terms are described as *anomalous experiences* are common and can be of many kinds in those making witchcraft attributions—whether hallucinations or dissociative alterations in the control, ownership, and awareness of thoughts, feelings, and movements. A well-known historical example is the claimed bewitchment and demonic possession of Mary Glover in 1602, but many instances have been described across cultures and periods of history.⁷⁶ Apparently spontaneous or pre-reflective alterations in experience can conform to locally acquired beliefs and expectancies—providing a mechanism by which experiential changes can give apparent proof of witchcraft, as with paranoid ideas more generally.⁷⁷ *Poor sleep* is common during

75. Vanessa Saalfeld, “Differences in Social Rank and Political Affiliation Encourage Paranoid Attributions,” <https://psyarxiv.com/jxkv3/> (accessed April 10, 2019).

76. *Witchcraft and Hysteria in Elizabethan London: Edward Jorden and the Mary Glover Case*, ed. Michael MacDonald (London and New York: Tavistock/Routledge, 1991).

77. Eamonn Walsh et al., “Brain Mechanisms for Loss of Awareness of Thought and Movement,” *Social Cognitive and Affective Neuroscience* 12, no. 5 (2017): 793–801;

anxious arousal and rumination, and would be expected to accompany fear of witchcraft attack—although evidence for this would need to be sought in narratives of the events preceding accusations. *Safety seeking behaviours*—which in the case of paranoia refers to defensive behaviours to avoid perceived threat in the short term—are arguably pervasive in witchcraft belief systems through ritual and other social responses to perceived cases of witchcraft. For example, the Bakweri used an expensive ritual technology to rid themselves of *nyongo* witchcraft. While these responses offer an apparently effective remedy, they reinforce the underlying assumptions of the system and hence perpetuate future potential threat. This draws attention to *reasoning biases*, which are fundamental to witchcraft attributions and considered further below.

From a biological perspective, the mesolimbic dopamine system has been implicated in the formation of delusions, with a key proposal that its dysregulation invests ideas and perceptions with aberrant salience. The precipitation or exacerbation of psychotic symptoms, including paranoid delusions, under circumstances of social and psychological stress implies that these conditions potentiate dysregulation of the mesolimbic dopamine system in predisposed individuals. As noted above, this raises the question of what role the mesolimbic dopamine system plays in culturally normative belief acquisition and maintenance, including under conditions of stress. The mesolimbic dopamine system is one of several neuromodulatory systems—in other words, systems which modulate the activity of large populations of neurons to influence cognition and behaviour. Another term for a neuromodulatory system is *arousal* system. Following on our earlier discussion of the mesolimbic dopamine system, and consideration of evidence from witchcraft, there are several ways in which emotional arousal may contribute to the cognitive and emotional salience of ideas that others intend harm, whether in witchcraft beliefs and narratives or as other types of culturally normative attributions. These can be framed as hypotheses:

(i) Ideas of social agency, and in particular of threat, are intrinsically arousing—partly mediated through activity of the mesolimbic dopamine system—contributing to their salience, memorability, and social transmission.

(ii) Embedding representations that others intend harm in communicative contexts that emotionally inflect them—ranging from nonverbal communication in everyday communication to highly salient cultural displays—

enhances the cognitive salience, perceived reality, and inferential relevance of representations that others intend harm. These effects are partly mediated through increased activity of the mesolimbic dopamine system.

(iii) The potentiation of mesolimbic dopamine system activity under conditions of social conflict and stress further lowers the threshold for attributions that others intend harm. This may manifest as the re-activation of ideas and types of narrative under stress that would otherwise be quiescent—such as *nyongo* or related ideas—which parallel the rekindling of paranoid delusions under conditions of stress in patient populations. A general human propensity of this kind acquires local specificity through ideas and narratives—such as those relating to witchcraft—that have been culturally learned.

In summary, the mesolimbic dopamine system is involved in biasing cognition towards a *type* of representation (that others intend harm), and the *threshold* for using this type of representation to interpret the social world. Confirmation of these hypotheses will require improved understanding of the role of the mesolimbic system in normal cognition, and in particular its modulation within social interaction and experience, but also in relation to the *ideas* shared within a culture. This leads us to consider the role of culture in influencing representations that others intend harm, whether in witchcraft narratives or other systems of idea and belief.

5. PARANOIA THROUGH THE LENS OF WITCHCRAFT

As we have seen, accounts of witchcraft emphasize social and cultural influences on the beliefs and behaviour of individuals. This raises the question of whether the cognitive and neurobiological processes known to influence paranoia can be more deeply linked to social and cultural processes. Paranoia can be viewed through the lens of witchcraft by considering the organization and cultural transmission of witch beliefs and narratives, and whether comparable processes are involved in paranoid attributions. The relationship between culture and belief was addressed by Ardener in his paper “Some Outstanding Problems in the Analysis of Events” which drew on his previous research on the *nyongo* phenomenon amongst the Bawkweri.⁷⁸ Ardener noted:

Certain kinds of zombie manifestations were correlated with low economic performance of the mass of the population. Yet that which correlated on each occasion was

78. Edwin Ardener, “Some Outstanding Problems in the Analysis of Events” in *The Voice of Prophecy and Other Essays* (Oxford: Oxford University Press, 2007 [1978]): 86–104.

not the symbolic content of the behaviour. This was separately 'assembled' at the different periods of manifestation, or so I hypothesised, through new symbols, or newly arranged old symbols. Thus, at one period, zombie manifestations were caused by persons who had built corrugated iron houses. They were thought to kill their younger relatives and to use them as zombie labour. At another period, the zombie phenomena were thought to be caused by 'Frenchmen.' The content was not continuous over time, but something else was: a repetitive, distinctive, structuring tendency that I then called a *template*.⁷⁹

In fact, Ardener speculated that there may even have been an earlier, now forgotten manifestation of the zombie witchcraft template in the nineteenth century or before, given the use of term *somba*, most likely cognate with the Caribbean term *zombie*, to designate pledging a relative to *nyongo*.⁸⁰

In his earlier work Ardener distinguished between *template structures* and *structures of realisation*. He later used the distinction between paradigm and syntagm in linguistics to describe them as p-structures and s-structures, respectively. The s-structures are the particular versions of zombie witchcraft realized in the stream of events. The p-structures, by contrast, are inferred from the contingent manifestations of s-structures. In Ardener's terms, the s-structures were generated from p-structures by a *mode of specification*—implicit rules which allow contingent conditions to express the underlying system of ideas of the p-structure. Ardener explained,

When we talk of *witchcraft* as having elements of universality, it is easy to see that we are talking of certain similarities essentially between p-structures. Despite the peculiarities of the observable aspects of Bakweri zombie manifestations compared with English witchcraft, the difference between the p-structures is much less great. We can hypothesize (the language shadow of) a p-structure thus: misfortune \leftrightarrow personal cause. We require a mode of specification of the kinds of events that qualify as misfortune and where to find the personal causes. Very similar p-structures may have very different modes of specification, thus generating very different s-structures.⁸¹

Ardener emphasizes the unconscious, automatic character of p-structures: "The p-structures must have a certain unconscious, blind, or automatic quality. They are not all open to awareness."⁸² Ardener's account has an important

79. Ibid.

80. Ardener, "Witchcraft, Economics, and the Continuity of Belief."

81. Ibid., 92.

82. Ibid., 98.

implication for how to conceptualize the effect of culture on explanations of misfortune: “When we look at this phenomenon that we have chosen to call witchcraft, we can see at once that changes may occur in the p-structures, in the mode of specification, and in the s-structures. If the p-structure changes to: misfortune \leftrightarrow impersonal cause, witchcraft vanishes.”⁸³

Ardener was writing in the era of post-structuralism, but he can be viewed as independently arriving at a concept of what in cognitive anthropology is now called a cultural model or schema.⁸⁴ At a neural level, the p-structure, or schema, that misfortune has a personal cause enlists “mentalizing” networks—brain systems that represent social agency and intention—to represent maleficent agency in the form of a witch. The contingent details are supplied by local combinations of new information that are inferentially relevant in terms of the schema. For example, Geschiere notes how in *kong*, a form of zombie witchcraft similar to *nyongo*, Mount Kupe is now imagined as a staging post where zombie relatives are sold to the mafia as part of global circuits of labor exploitation.⁸⁵ Note here that brain systems used to support representations of agency and social intentions are enlisted as part of a culturally acquired causal attributional style triggered under relevant circumstances. Yet the p-structure (or schema) linking misfortune to maleficent agency can change. If so, then the mentalizing network would not be enlisted during causal attributions to account for misfortune; or would not be enlisted to support witchcraft accusations, but some alternative representation of inimical agency.⁸⁶ Consequently, belief in witchcraft is influenced by locally acquired, overarching inferential structures (p-structures, cultural models, or schemata, embedded within narratives) that organize relations between concepts and the brain systems that represent them. These schemata are internalized (learned) from interactions with the social and physical world during development—including from exposure to typical cultural narratives. The acquisition of schemata is influenced by arousal systems such as the mesolimbic dopamine system through a range of potential mechanisms. As noted above, these are likely to include the inherent emotiveness of personal causal attributions of harm; and the emotional inflection of ideas in routine social interaction, as well as during the heightened emotion of social conflict and cultural displays.⁸⁷ Brain activity is modulated by cultural

83. *Ibid.*, 93.

84. Quinton Deeley, “The Cognitive Anthropology of Belief” in *The Power of Belief*, eds. P. W. Halligan and M. Aylward (Oxford: Oxford University Press, 2006).

85. Geschiere, *Witchcraft, Intimacy, and Trust*, 15.

86. Quinton Deeley et al., “Modelling Psychiatric and Cultural Possession Phenomena with Suggestion and fMRI,” *Cortex* 53 (2014): 107–19. This experimental study shows differences in brain activity during attributions of personal and impersonal causation of suggested involuntary limb movement.

87. Deeley, “The Religious Brain,” and above.

learning and social contexts during development and in immediate responses to the world. This contributes to the consolidation of schemata, and their deployment in largely automatic, locally plausible interpretations of the world.⁸⁸

Research on paranoia identified *reasoning biases* as contributing to the emergence and maintenance of paranoid ideas—for example, lack of “belief flexibility,” whereby alternative explanations for misfortune are not considered; a “jumping to conclusions” reasoning style, and reduced analytic thinking. The processes of cultural learning considered here suggest that any variations of individual reasoning style occur within the context of interpretative schemata and styles of reasoning that are widely shared within a social group—for example, as narratives. Applying this perspective to paranoia suggests that different types of paranoid attribution can be analysed as contingent manifestations of underlying schemata (s-structures and p-structures respectively, in Ardener’s terminology). This draws attention to the cultural sources of ideas incorporated into paranoid attributions, and in particular the social contexts, media, and narratives through which they are transmitted. While some notions are widely communicated in a society, others are elaborated and conveyed within informational enclaves such as small groups, or indeed the virtual communities of the Internet. While paranoia has traditionally been explained by causal processes which are intrinsic to the individual, elucidating the cultural origin and transmission of paranoid ideation re-embeds individual psychology and brain function within the social world. The relationship of individual psychology to society and culture has a bearing on when paranoia, and witchcraft attributions, should be considered pathological.

6. PATHOLOGY AND NORMATIVITY

The contrast between a traditional biological model—which has tended to view paranoia as the result of cognitive and brain processes that have gone deeply awry due to disease—and recent psychological approaches—which emphasizes a continuum of paranoid ideas in the population—can be understood in terms of what should be taken to imply *dys*-regulation, as opposed to regulation, of brain systems such as the mesolimbic dopamine system and accompanying psychological processes. Paranoid ideas which are highly discrepant from shared notions of a relevant social group, or which are associated with other types of positive psychotic symptom (such as thought disorder or hallucinations), suggest that constraints on cognition and brain function have become uncoupled from those operating across the social group as a whole. Under these conditions, culturally mediated ideas can nevertheless become incorporated into the paranoid ideas of individuals, although often in highly idiosyncratic ways. Indeed, during the emergence of

88. Deeley, “The Religious Brain.”

psychosis there is an *attraction* to cultural schemata and narratives that convey paranoid ideas—including notions of witchcraft—to an extent that would not otherwise be the case. Alternatively, the emergence of paranoid ideas that *are* shared with those of a relevant social group also suggests shared constraints on cognition and brain function. The ideas may be unfounded, preoccupying, or distressing, and may even motivate violence, but they are not pathological in the psychiatric sense. Between these poles there is clearly scope for individual and (sub)cultural variation. For example, the ability of individuals with a propensity to psychotic or quasi-psychotic ideas and experiences (schizotypy) to seek out virtual communities of like-minded people complicates clinical judgments about pathology and normality. Equally, it is possible for a person to interpret symptoms of common mental disorders—such as low mood, excessive fatigue, or anxiety, as well as psychotic symptoms—as the result of witchcraft. Witchcraft attributions may powerfully influence the characteristics, course, and response to treatment of the illness.⁸⁹ In these circumstances, the illness may simultaneously satisfy diagnostic criteria for a mental disorder, and local criteria for bewitchment.

7. CONCLUSIONS

Witchcraft as a historical and cultural phenomenon, and paranoia as a clinical phenomenon, both involve attributions that others intend harm. Paranoid delusions are unfounded beliefs that are nevertheless held with conviction and are usually preoccupying and distressing. Anthropological and historical accounts tend to view witchcraft beliefs as cultural imaginaries involving the attribution of misfortune to occult human agency. Paranoid ideation and witchcraft attributions are more common under conditions of social and psychological stress. Research has identified specific psychological causal factors, and increased mesolimbic dopamine system activity, as implicated in the emergence and maintenance of paranoid ideation. These psychological and neurobiological processes may also be implicated in the interpretation of misfortune as due to witchcraft, particularly in the context of social conflict and psychological stress. These proposals require further research into the role of psychological processes, and the cognitive effects of arousal systems, in intensifying the salience of witchcraft attributions in the context of culturally

89. See for example *Witchcraft and Hysteria in Elizabethan London*, ed. MacDonald; Deeley, “Hypnosis as a Model of Functional Neurologic Disorders”; and Quinton Deeley, “Hypnosis as Therapy for Functional Neurologic Disorders,” *Handbook of Clinical Neurology*, 139 (2016): 585–95.

learned responses to conflict and perceived misfortune—as articulated in particular through cultural narratives. Equally, anthropological and historical accounts of witchcraft show how cultural learning and social contexts inform interpretation of the world, including under conditions of social conflict and stress. These approaches are relevant to understanding social and cultural influences on paranoid ideas and beliefs. Re-embedding the psychology and neurobiology of paranoia in social and cultural processes, including immersion in cultural narratives, is relevant to considering what should count as pathology in the context of human variation.