BRAIN AND SOUL IN LATE ANTIQUITY

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ABSTRACT

This dissertation examines conceptualisations of the brain (Greek: ἐγκέφαλος; Latin: cerebrum) in Christian texts from the fourth and fifth centuries CE. While there has been significant interest in the body and in the intersections of medicine and religion at this period, no study has yet focused upon early Christian understandings of the brain. Yet, the brain was critical to formulations of human nature and human identity in late antiquity. At a period when intellectuals and religious leaders were pressed to articulate and to defend definitions of the human soul as distinct from, if entangled with, the human body, the brain proved to be both a fruitful and a troubling conceptual resource: fruitful insofar as it condensed the paradoxes of the human being, positioned between heaven and earth, material and immaterial spheres, and troubling insofar as it threatened to confine the soul, even to render the soul unnecessary. Through close readings of Christian texts, both theoretical and pastoral in orientation, this dissertation not only highlights the elements of medical theory with which early Christian authors were familiar, but also draws out the contemporary concerns which shaped and were shaped by engagement with the brain. It conclusions are fourfold: (1) The brain represented in condensed form the paradoxical status of the body within early Christianity. (2) Brain health provided preachers with a way of talking about spiritual and social wellbeing. (3) Organic mental disorders became a stock model for affective and doctrinal deviance. (4) Theological concern to find a model of psychic healthcare which might incorporate but not privilege the body shaped late antique and medieval conceptualisations of the brain.
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INTRODUCTION

1. The Brain in Late Antiquity

But if sickness should fall upon the cerebral membrane, the corruption of the vapours and humours damages the brain (ἐγκέφαλον), which, being washed around on all sides, ceases to receive the activity of soul, but resembles someone who is underwater, moving hands, feet, and other part of their body at random. Surprisingly few studies have examined the brain (Lat. cerebrum, Gk. ἐγκέφαλος) as an object in ancient medicine, religion, and philosophy. When attention is paid to the brain, it tends to be oriented within a medical or a scientific framework. What functions did the brain play in different medical systems? What methods did the imperial physician Galen use to “prove” to his opponents and to his patrons that the brain was “the source of the nerves,” and therefore the organ of the ruling part of the soul (hégameonikon)? Which ancient philosopher, scientist, or physician came closest to anticipating “the domain we now call neuroscience”? As yet, there has been no study devoted to the medical concept of the “brain” as it was adopted into and transformed within the non-medical literature of antiquity and late antiquity.

1 Thdt., Haer. fab. comp. 5.9 (PG 83, 481.14–9): Εἰ δὲ τὴν μὴν γηγερρεῖ οὐκ ἄσθμα, σίνηται μὲν τὸν ἐγκέφαλον ἢ τὸν ἄτμων καὶ τὸν χωμίον μοχθηρία, ύπο δὲ τοὺς περικυκλώμενος, οὐ δέχεται τῆς ψυχῆς τὴν ἐνέργειαν, ἀλλ’ ἔοικεν ὑποβρυχίῳ τινὶ γενομένῳ, καὶ ὡς ἔτυχε καὶ χεῖρας κινοῦτι καὶ πόδας καὶ τὰ ἄλλα τοῦ σώματος μέρια. All translations are my own, except where otherwise noted.
3 Particularly compelling in this regard is the work of van der Eijk 2005a.
4 Tieleman 1996 and Hankinson 1991 examine Galen’s use of experimentation and logic to counteract the Stoic theory that the heart was the seat of the hégemonikon. See further in chapter one.
5 Gross 1995, 245: “Perhaps Aristotle’s most egregious scientific error fell in the domain we now call neuroscience: he systematically denied the controlling role of the brain in sensation and movement, giving, instead, this function to the heart.”
A deeper understanding of the brain as a conceptual object in antiquity is a desideratum. Especially pressing is the question of how medical understandings of the brain travelled from technical into non-technical domains. The medical anthropologist Emily Martin has argued that "scholarly debates over what critical position to take in relation to neurological accounts of human social life would benefit from looking into what is at stake among non-experts struggling over how to position the brain in their lives." That is to say, the surge of studies in critical neuroscience must not be restricted to expert discourses alone, if the potency and the implications of neuroscientific accounts of human experience are to be understood in any depth.

The reason for this is that, as Martin observes through her study of persons diagnosed with depression and bipolar disorder, "concepts of the brain can do a variety of kinds of work in...

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7 See Holmes 2010, 18–9, which introduces the term “conceptual object” with reference to the “body” (σῶμα) in ancient Greek thought. This approach builds upon a tradition of historicising natural “facts” as epistemic creations, as exemplified by Fleck 1981 [1935], and, more recently, Rheinberger 2010 [2007]. See also the now famous discussion of Donna Haraway, in Haraway 1988, 595: “bodies as objects of knowledge are material-semiotic generative nodes. Their boundaries materialize in social interaction. Boundaries are drawn by mapping practices; ‘objects’ do not preexist as such. Objects are boundary projects. But boundaries shift from within; boundaries are very tricky. What boundaries provisionally contain remains generative, productive of meanings and bodies.”

8 E. Martin 2010, 379.

9 The formulation of the “critical neuroscientific” project is relatively new. See Choudhury, Nagel, and Slaby 2009; Choudhury and Slaby 2012; Slaby 2015; Slaby and Gallagher 2015. Emily Martin has also been critical of neuroscience, albeit without situating her work within the framework articulated by Choudhury, Nagel, and Slaby (E. Martin 2000; E. Martin 2010). See Fitzgerald et al. 2014, 365 for a critique of critical neuroscience: “Put crudely, scholars within this tradition, sometimes rooted in the Frankfurt School, and usually tilting at the hidden political and economic entanglements of neuroscientific assumptions, try to pull the experimental rhetoric and practice of neuroscience away from an organizing fantasy of distanced facthood, and towards a more concretely political and reflexive socio-critique—re-inscribing the objects of neuroscientific practice back within the webs of social, cultural and historical context to which they are always inevitably subject.”
the enterprise of self-making.” Lay interpretation of the brain and the part that it plays in one’s affective and social experiences offers the anthropologist or historian more than simply a carbon copy or a pared down version of contemporary brain science: Non-expert explanations of and involving the brain are in fact a central mechanism through which the brain becomes formed as a conceptual object that signifies within a culture. Thus, Martin goes on to say that “[t]his is an open moment: although the outcome is far from clear, the brain is a plural thing, culturally speaking. The brain is one organ that is generating many kinds of self-making projects.” While Martin is writing in response to the neuroscientific paradigm, her remarks apply to the ancient world also. Self-making was an important project in antiquity, for doctors, philosophers, and laypersons alike. The brain, as I seek to demonstrate in the chapters to follow, was central to that project.

This dissertation investigates representations and conceptualisations of the brain in Christian texts (theoretical and pastoral) from the fourth and fifth centuries CE. If ancient conceptions of the brain have been rarely studied, then the attention devoted to late antique and

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10 E. Martin 2010, 378. On the role of the brain in contemporary formations of subjectivity, see Dumit 2003 (depression and neuroscience, in relation to pharmaceutical interventions); E. Martin 2004 (a critique of neuro-reductionism); Wilson 2004 (an argument that the biological reductionism of the nervous system can function as a road back to an embodied and an enmattered philosophy of the mind); Rose 2007 (on pharmaceutical interventions and brain chemistry); and Vidal 2009 (the brain as the “anthropological figure” of modernity); Slaby and Gallagher 2015 (on neuroscience as an institution that reframes conceptions of self and subjectivity). There are also, of course, numerous studies which make the case that the brain is not merely central to current constructions of selfhood, but is in fact the biological foundation of the self. See, for example, LeDoux 2002; Ramachandran 2011; Churchland 2013. On the entanglement of society and neuroscience in biological formation, see Fine 2010 (gender); Rose and Abi-Rached 2013 (neuroscience as a technology for “managing” the mind).
11 E. Martin 2010, 379.
12 The conceptualisation of “selfhood” has been a particular focus within early Christian studies: Perkins 1995; Cary 2000; Mastrangelo 2007. On philosophical approaches to the “self” in antiquity, see also Gill 2006a; Sorabji 2006; Remes and Sihvola 2008. The literature, as one might imagine, is quite vast.
early Christian brains is virtually nil.\textsuperscript{13} This is surprising, since the brain emerges in this period as a popular figure in Christian texts. While few medical texts survive from the fourth and fifth centuries, the brain is often cited by theologians and preachers as the locus or agent of psychic government within the body.\textsuperscript{14} The important fourth-century development of “ventricular localisation,” a theory of the brain that remained influential into the early modern period, first appears in the writings of the bishops Nemesius of Emesa and Augustine of Hippo.\textsuperscript{15} More casual references identify the brain as necessary for reason and as a model for ruling figures, earthly and divine. The brain is a king within the body; the brain is a high official, carrying out the orders of the king; the brain is Christ, spreading spirit to all of the members of the church; the brain is God, encompassing and directing all the creatures of the earth.\textsuperscript{16} All of this raised the question, and raised it repeatedly, of what happens when the brain goes wrong.\textsuperscript{17}

It is striking, then, that despite the upsurge in scholarship on the early Christian body that has followed Peter Brown’s seminal work \textit{The Body and Society}, no study has yet taken the early Christian brain as its central object.\textsuperscript{18} For historians of the mind, it seems, the brain is an

\textsuperscript{13} Chris de Wet speaks briefly about the brain in his forthcoming article on John Chrysostom’s approach to gluttony (de Wet \textit{forthcoming}). I engage with his argument more closely in chapter three.

\textsuperscript{14} A number of theologians rejected this Galenic doctrine, preferring the Stoic, Aristotelian, and scriptural precept that the source of human life and intelligence lies in the heart. See especially the detailed discussion in Gilbert 2014, 8–129. On the dearth of medical literature surviving from the fourth and fifth centuries CE, see Nutton 1984.

\textsuperscript{15} See further in chapter two.

\textsuperscript{16} The political aspects of the brain shall concern us particularly in chapter three.

\textsuperscript{17} See chapters three and four.

\textsuperscript{18} Brown 1988, now with a new preface in the anniversary edition Brown 2008. The post-Brownian historiography of the early Christian body is substantial. Some significant landmarks include Castelli 1991 (gender fluidity) and 1992 (asceticism); Clarke 1992 (the Origenist controversy); Elm 1994 (asceticism); D. Martin 1995 (the body as a political model); Bynum 1995a (bodily resurrection); T. Shaw 1998 (the intersection of medical and ascetic discourses); Miller 2009 (on the role of the body in the late antique imagination); Hunt 2012 (asceticism).
interesting artefact of ancient medical thought, but does not promise an account of how early Christians and their non-Christian peers thought about thinking, thought about the mind. ¹⁹ For historians of the body, meanwhile, the brain is perhaps a little too close to the traditional focus upon reason at the expense of affect, soul to the exclusion of body. ²⁰ Yet, as we shall see, the brain is a critical object of study precisely because it participates in both the psychological and the physiological spheres. As the instrument of the rational and governing soul, it rules over the rest of the body; at the same time, it is subject, as manifested in the epigraph which opens this introduction, to saturation by corrupt humours and the painful infusion of vapours. In late antique anthropology, the brain stands—much like the human being as a whole—on the border between body and soul, mediating between the two spheres, and embedded in the ecosystem of each. ²¹

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¹⁹ The Cambridge History of Philosophy in Late Antiquity (Gerson 2010), for example, mentions the brain only in relation to Claudius Ptolemy (c. 90–180 CE). For a noteworthy exception, see O’Daly 1987, 80–5 and 129–30, which addresses the role of the brain in Augustine’s theory of sensation and (distorted) imagination.

²⁰ This is especially likely since the brain in antiquity was primarily associated with the faculty of reason, while emotion was almost invariably located in the heart. In partitive psychologies, such as that described in Plato’s Timaeus, reason and emotion were split between brain and heart. In unitary psychologies, such as that of the Stoics, both reason and emotion were operations of the heart. See Schiefsky 2012 for Galen’s influential reception of Plato’s tripartition of the soul, esp. 344–45 for Galen’s failure to consider transferring the emotions, together with reason, to the brain. Schiefsky identifies one exception to this association between emotions and the heart, that is, the Hippocratic author of On the sacred disease, which Galen had rejected as inauthentic, but which continued to be read in late antiquity.

²¹ The location of the human being on the boundary between corporeal and incorporeal beings was common in late antique philosophy. See, for example, Nem., Nat. hom. 1, 2–7, which draws on, among other sources, Phil., Op. mund 135.
The fourth century was transformative in the history of Christianity. During this period, Christianity became first a legal and then a compulsory religion within the Roman Empire.\(^{22}\) Bishops, priests, and holy men became ambassadors between rulers and cities, rich and poor, human and divine.\(^{23}\) Theological debates burned like wildfires, and resulted in deposition, excommunication, and exile.\(^{24}\) Central to these controversies was the contested status of the human body, which was both rejected as a site of corruption and sin, and celebrated as the medium of the incarnation and the resurrection, as well as of spiritual practices such as ascetic training.\(^{25}\) The central argument of my dissertation is that the brain, as instrument of reason, condensed these tensions, and therefore became both a tool for, and a challenge to, Christian formulations of the body–soul relationship.

More precisely, the conclusions I emphasize in this study are as follows: (1) The brain was a problematic organ for Christian intellectuals and preachers in late antiquity. On the one hand, Christian authors sought to assert their own expert authority through appropriation of medical discourse, including medical models of the brain. On the other hand, the brain threatened the Christian emphasis upon the transcendence of the soul. In this way, the brain

\(^{22}\) A great deal has been written on pagan/Christian relations and the survival of traditional religious practices and allegiances under fourth- and fifth-century Christian rule. See, for example, Momigliano 1963; Lane Fox 1987; MacMullen 1997; Cameron 2011; Jones 2014; the essays collected in Salzman, Sághy, and Testa 2015; Watts 2015.


\(^{24}\) Allen and Neil 2013, 97–145, focusing on letters as sources for theological crisis and controversy in the fifth and sixth centuries. See also the forthcoming volume of essays edited by Julia Hillner, Jakob Engberg, and Jörg Ulrich (Clerical Exile in Late Antiquity).

\(^{25}\) Succinctly put in Castelli 1992, 137: “The paradox of early Christianity, of course, is that its apparent rejection of the body as a shadowy and passible shell of the immortal soul is located within an ideological and practical matrix thoroughly focused on the body.”
represented the paradoxical status of the body within early Christianity. (2) Brain health provided preachers with a way of talking about spiritual and social wellbeing. Cerebral hygiene could be invoked as a sociopolitical and a spiritual obligation in order to enforce particular modes of self-care (for example: sobriety). Medical and moral concerns, always overlapping, intersected most clearly in the spaces of the brain. (3) Organic mental disorders, such as inflammation of the brain membranes, became a stock model for affective and doctrinal deviance, deepening the perennial discourse of “crazy” through detailed embodiment. (4) Theological concern to find a model of psychic healthcare which might incorporate but not privilege the body shaped the conceptualisations and visualisations of the brain that were disseminated both through high-brow philosophical texts and through popular homilies and sermons.

The brain mediated earthly and divine within the human being. Its vulnerability and its power functioned as warnings of human vulnerability, and the imperative to cerebral hygiene was an imperative to the care of the soul. The medical idea of the “brain” in late antiquity provided a model for thinking through the novelty of a salvific philosophy that insisted upon the body as both promise and recurrent problem that transcendence could never quite resolve.

2. Method

The central method employed in this dissertation is careful readings of references to the brain in Christian texts from the fourth and fifth centuries CE. I have sought in particular to contextualise these references against the backdrop of ancient medical discourse about the brain, late antique concerns about the body and its relationship to the soul, and the rhetorical and therapeutic goals of Christian preachers. In this section, I will talk briefly about an aspect of my method which
appears most consistently throughout my work, and which requires a word of explanation: That is, my investigation of metaphorical representations of the brain.

In early Christian texts, the brain appears most frequently as a sign for something else. Few Christian authors from late antiquity were interested in expounding the medical model of the brain for its own sake. More often, they used the concept of the brain to further their own rhetorical goals. In some cases, the brain appears as a metaphor for something else (for example, Christ). At other times, metaphors are used to bring the brain to life (for example, the brain is like a citadel, a treasure, a high official). Both perspectives offer fruitful insights into the roles that the brain could play in the imaginative landscape of late antiquity.

Metaphor was a fundamental aspect of late antique Christian rhetoric, indeed of ancient rhetoric more broadly. It was also a central, if controversial, component of medical and scientific discourse, allowing authors to “refer to what really exists, while conceding that our knowledge of the relevant aspects of reality might be incomplete.” Metaphor allowed theologians, philosophers, and scientists alike to hypothesize and to explicate ideas and objects

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26 I do not explore this metaphor in the present work. For exploration of Christ as the “brain” in John Chrysostom, see Wright forthcoming a.

27 For a similar focus upon imagery, cf. Padel 1992, 43, regarding pre-Socratic physiology: “I am not treating their work as theory, as the object of analysis, but listening to the imagery in the theories.”

28 Quint., Inst. 8.6.4 (Radermacher and Buchheit 1971, 114): Incipiamus igitur ab eo, qui cum frequentissimus est tum longe pulcherrimus, translatione dico, quae μεταφορά Graece vocatur. “Let us begin, therefore, from that which is both the most frequent and the most beautiful by a long way—that which I call *translatio*, but which is called in Greek *metaphora*.” Cameron 1991, 57: “Like visual art, early Christian discourse presented its audience with a series of images. The proclamation of the message was achieved by a technique of presenting the audience with a series of images through which it was thought possible to perceive an objective and higher truth.” See also 181: “‘religious language’ in late antiquity went through a movement from ‘religious expression as and within an intellectual system towards religious expression that is less intellectual and more purely metaphorical!’” (quoting Soldati 1984).

29 Harrison 2007, 142. Von Staden 1995 demonstrates the centrality of metaphor to Galen, even as Galen rejects figural language.
unavailable to phenomenological experience. Yet, while much has been written on metaphor in theological and in scientific contexts, little work has been done on the role of scientific models and theories as metaphors in Christian rhetoric.\(^{30}\) How, precisely, are we to use such metaphors to understand religious and popular conceptions of the brain in late antiquity?

An important exception to the absence of scholarship on scientific metaphors in Christian rhetoric is the attention that Soon Ai Low and Leslie Lockett have paid to the “hydraulic model” in Old English and Anglo-Saxon literature.\(^{31}\) The “hydraulic model,” also known as the “container metaphor,” is a label for (“metaphorical”) language which refers to thoughts and emotions as fluids moving within or contained within the heart.\(^{32}\) Grounding herself in the influential framework of “conceptual metaphor” devised by Lakoff and Johnson, Lockett draws upon the work of Low to argue that the “hydraulic model” is not “a metaphor in the traditional sense of a superfluous literary ornament,” but rather is “a conceptual metaphor”—that is, a “systematic mapping of entities and relations” across sensorimotor and abstract domains.\(^{33}\) In opposition to conventional interpretation of Old English and Anglo-Saxon accounts of psychological distress as “metaphorical”—that is, as ornamental—Lockett and Low each proposed that psychological experience in these texts is not separable from physiological movement and transformation. That is, the heart is a container for fluids which embody, cause, and constrain emotional experience. The “metaphor,” such as it is, functions as a conceptual tool for understanding and explaining human emotion.

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\(^{30}\) Soskice 1987 compares the function of metaphor in religious and scientific discourses.

\(^{31}\) Low 1998; Lockett 2011.

\(^{32}\) This is not to be confused with the “hydraulic model” used in modern biomedicine to explain the pumping function of the heart, although the two models are not unrelated.

\(^{33}\) Lockett 2011, 7. Lakoff and Johnson 2003 [1980].
This argument will be important in the chapters to follow, and particularly in chapters two and three. As we shall see, the brain could be thought to “govern” the body by analogy to the governing soul. I shall defend the claim that this metaphor is not merely incidental or ornamental, but rather reflects the tightly interwoven relationship between brain and soul. That is, the “governing brain” was a conceptual tool for articulating the function of the brain as the bodily instrument of the governing soul, and as the organ from which impulses to movement were issued to other bodily members. That is to say, the concept of the “brain” enabled preachers and theologians to “say things that [could not] be said in any other way.”

At the same time, it is necessary to point out divergences between the brain in late antique literature and the heart in the Anglo-Saxon contexts explored by Lockett and Low. Whereas they interpret references to the “hydraulic model” as indicative of an underlying conceptual map, late antique preachers were inconsistent in explicating the governing role of the brain. Sometimes the brain was the ruler, at times the official or councilor, and at times no more than the architectural space or furniture within which the monarch might reside.

The slippage between these metaphors represents the ambiguity which rhetoricians cultivated regarding the exact nature of the relationship between the soul, the brain, and the activities and affections which might be ascribed to each. The motivation for cultivating this ambiguity was twofold. First, it allowed the brain to be moulded to the preacher’s immediate rhetorical goal. Second, it served to express the fundamental paradox of the human condition within early Christian doctrine—that is, the body which must be rejected as corrupt was also the

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34 Harrison 2007, 140 on the work of I. A. Richards and Max Black: “Both insist that, far from being merely ornamental and reducible to literal language (as the substitution theory claimed), metaphors can be used to say things that cannot be said in any other way.”
medium of the incarnation, the resurrection, and of spiritual practices through which one might perfect one’s soul.

Late antique preachers also thought a great deal about metaphor. The fourth century CE was, famously, a period of contestation regarding the value and veracity of allegorical and literal interpretations of the Judaeo-Christian scriptures.\textsuperscript{35} Scholars have, in recent decades, challenged the \textit{communis opinio}, that fourth-century exegetes were divided into the “Alexandrians,” who dealt in allegory, and the “Antiochenes,” who offered only literal interpretations.\textsuperscript{36} While there were those exegetes who identified with each “school,” the terms are perhaps better understood as “fighting words,” as Margaret Mitchell calls them, leveraged in order to “justify one’s own reading and denigrate that of the other.”\textsuperscript{37} The stakes in this interpretative battle were high, but the result was not that one mode of reading prevailed—not, at least, in the fourth and fifth centuries. Rather, through polemical sermons and orations, through pamphlets and tracts, late antique congregants were trained to discern and to distinguish layers of figurative and literal meaning within scriptural imagery.\textsuperscript{38}

Mitchell warns that “what we have access to … is quite skilled individual interpreters who seek to shape interpretative communities; that does not mean their views are representative

\textsuperscript{35} See Froehlich 1984, 20–2 and also the useful discussion, with references, provided by Sandwell 2011, 544. For a more detailed discussion, see Amirav 2003, 33–44.
\textsuperscript{36} Young 2003 offers a clear introductory survey. See also Young 1997; Martens 2008. Lim 1990 shows how exegetical practice might be tailored to context. Hall 1998, 160–163 and \textit{passim}, illustrates the persistence of the Alexandria/Antioch polarisation in contemporary scholarship on late antique scriptural exegesis.
\textsuperscript{37} Mitchell 2009, 186. Cf. Dawson 1992 for the constructedness of “meaning.”
\textsuperscript{38} Harrison 2007, 118: “One result of distinguishing between the spiritual meanings of a sacred text and the literal sense of the words that constitute it was that an enormous number of different, and sometimes rival, interpretations of the same texts became possible.”
of those communities, or that communities are made up of readers who completely agree. Yet, while we might not extrapolate from any given sermon the interpretative method of its initial interpretative community, we can plausibly infer that exposure to a range of competing interpretations, all of which drew upon a range of reading strategies, and many of which deployed the terms of figurative and literal exegesis, would have schooled late antique audiences in the practice of hearing multiple meanings within a single image, even within a single word.

Throughout this dissertation, I assume that audiences and readers were expected to (and did) apply this interpretative practice not only to images in the Judaeo-Christian scriptures, but also to those proffered by contemporary Christian authors. Trained in rhetoric and in exegesis, preachers and theologians alike wove literal and figurative threads into a pedagogical rhetoric that worked upon its audience through its connection between different images and different planes of meaning. It is of value to us, as readers, to explore these different meanings, together with their interconnections and their ruptures. The ambiguity of the brain as both bodily part and as representative of the soul presented a polyvalence to which ecclesial audiences were thoroughly accustomed.

3. Approach

This dissertation brings late antique studies into conversation with contemporary studies in history of medicine, science, and the body. In particular, my approach is grounded in a social constructionist framework, that is, the premise that our bodies and our embodied experiences are

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39 Mitchell 2009, 183fn13
moulded and materialised through social, cultural, political, and economic forces.\textsuperscript{40} Emergent in the late sixties and early seventies, social constructionism endeavoured to realise and to extend Simone de Beauvoir’s insight that a woman is “not born, but becomes.”\textsuperscript{41} The body is not natural.\textsuperscript{42} There is, in consequence, no “essential” or unmarked body that we may take for granted in evaluating the bodies and the epistemology of bodies that we encounter among others.\textsuperscript{43}

Social constructionism is going out of fashion. As critics have argued, the disjuncture that social constructionism poses between the body and sociocultural forces are predicated upon the notion of a passive, “precultural” body waiting to be acted upon by the Aristotelian stamp of society and culture.\textsuperscript{44} In particular, the social constructionist project associated with feminist scholarship on the body has been criticised, especially by new materialist theorists, as

\textsuperscript{40} Duden 1991 [1987], vii articulates well the intellectual position which the social constructionist framework resists: “One of the historian’s most tenacious mental habits is the strict separation of biology as an immutable sphere of life from society and culture as spheres that are variable and changeable over time. In this dichotomy between nature and history, the body is assigned to the category of nature and biology. As a result, histories of the human body examine cultural variations of the body’s manifestations and attributes ... . But the vehicle of all this activity, the body itself, is always thought of as a physiologically stable entity.” The intellectual landscape has shifted since Duden made these observations. See, for example, the survey in van Wolputte 2004, and the comment at 264: “In today’s context the body is no longer given. On the one hand, it is a canvas on which major cultural, social, and political changes are projected. On the other hand, it is a (if not the) major focus and objective of these changes.”

\textsuperscript{41} De Beauvoir 2009 [1949], 283. See Donna Haraway’s extension of this phrase: “Bodies, then, are not born; they are made ... one is not born an organism; they are constructs of a world-changing kind” (Haraway 1989, 10). Csordas 1990 provides a valuable discussion of how various external forces shape embodied experience.

\textsuperscript{42} Lloyd 1992 introduces to the study of ancient philosophy and medicine the idea that nature must be “invented.”

\textsuperscript{43} See Fuss 1989 on essentialism. Lock 1993a surveys and critiques the field from the perspective of medical anthropology. Mauss 1935 [1934], which made the powerful case that all human behaviour is learned rather than innate, has been key to this line of thought.

\textsuperscript{44} Bruno Latour has been at the forefront of social constructionism (see, for example, Latour 1983), but qualifies and problematises extreme versions of the social constructionist approach in Latour 1992.
insufficiently engaged with biology, and as a reinscription of dualisms between nature and culture, between body and mind. Social constructionism, as new materialists point out, does not adequately account for how biology and society are intertwined.

Social constructionism, like relativism and other forms of skepticism, also always threatens to undermine itself: Everything is socially constructed, historians of science have taught us—even this. Nonetheless, the premises of social constructionism remain relevant, especially within the charged field of medical anthropology. Here, the understanding of the

45 For critique, see especially Grosz 1994; Wilson 2004. Ahmed 2008 argues that there is a habituated gesture of dismissal at work in such critique, wherein “second-wave” feminism in particular is uncritically associated with “biophobia.” Davis 2009 rejects Ahmed’s arguments, and insists instead that new materialism differs importantly from social constructionism in its emphasis on the inseparability of biology and society.
46 “Entanglement” has swiftly become the technical term. See especially its use in Barad 2007; Davis 2009.
47 Collins and Yearley 1992, aptly titled “Epistemological Chicken.” Especially incisive are the comments at 304 and 308: “Within the first few nanoseconds of the relativist big bang, nearly everyone realized that the negative levers were equally applicable to the work of the sociologists and historians themselves. ... In sum, following the lead of the relativists, each new fashion in SSK [sc. sociology of scientific knowledge] has been more epistemologically daring, the reflexivists coming closest to self-destruction. Each group has made the same mistake at first; they have become so enamored of the power of their negative levers on the existing structures as to believe they rest on bedrock. But this is not the case. Though each level can prick misplaced epistemological pretentions, they stand in the same relationship to each other as parallel cultures; no level has priority and each is a flimsy building on the plain.”
48 See the discussion in Scheper-Hughes and Lock 1987, esp. 6–7: “We refer to this as a prolegomenon because we believe that insofar as medical anthropology as failed to problematize the body, it is destined to fall prey to the biological fallacy and related assumptions that are paradigmatic to biomedicine. Foremost among these assumptions is the much-noted Cartesian dualism that separates mind from body, spirit from matter, and real (i.e., visible, palpable) from unreal. Since this epistemological tradition is a cultural and historical construction and not one that is universally shared, it is essential that we begin our project in medical anthropology with a suspension of our usual belief and cultural commitment to the mind/body, seen/unseen, natural/supernatural, magical/rational, rational/irrational, and real/unreal oppositions and assumptions that have characterized much of ethnomedical anthropology to date.” Two key fields in which the constructionist perspective remains important are mental illness (see below) and gender/sexuality (Butler 1990; Dreger 1998; Fausto-Sterling 2000). For a defence of social constructionism in science studies, see Barad 1996.
bodily and mental experience (and the distinction between the two) as socially and culturally
produced has raised questions about how different therapeutic practices can co-exist without
biomedical imperialism, and also about how our own cultural and philosophical presuppositions
weight certain understandings of the body/mind as more “natural” than others. Among the most
important lessons of cross-cultural medical anthropology is the denaturalisation of one’s own
cultural frame. How are contemporary anthropologists and practitioners working within a
biomedical paradigm to engage in anti-imperialistic fashion with the medical and therapeutic
frameworks of others? How is biomedical authority to be critiqued without a denial of its
efficacy? Anne Fadiman’s influential book The Spirit Catches You and You Fall Down
documents the story of a Hmong child whose family had fled to California from Vietnam, and

49 Cross-cultural variation in psychiatric models and experience has long been noted. See
especially the influential work of Arthur and Joan Kleinman on depression in Chinese culture
(Kleinman 1977; Kleinman and Kleinman 1985). More recently, see Jean E. Jackson’s
anthropological study of chronic pain in American society, and the challenge that it poses to
mind/body dualism, in Jackson 2005. Also important is the examination of cross-cultural
“pharmaceutical anthropology” in Banerjee, Chakrabarti, and Das 2013, with particular focus
upon psychopharmaceuticals.

50 That is to say, without assuming the biomedical paradigm as the standard of truth against
which others must fall short, such that biomedical diagnoses and therapeutic practices must be
imposed upon all, regardless of the desire of those considered sick. The complications of this
question, ethical and epistemological, are considerable, and I do not seek to do more than flag
them here.

51 See the helpful discussion in Viney, Callard, and Woods 2015, 2: “This does not mean
abandoning what has given the medical humanities its successes, not least its resistance to
positivist biomedical ‘reductionism’, its designation of the patient–clinician relation as a renewed
focus of attention, its interest in concepts of disease and practices of diagnosis, the dynamic role
of the arts in health, and the therapeutic importance of comparative histories. But, we argue, it
does involve actively reflecting upon and interrogating the normative and individualistic
restrictions that may accompany these strategic gains. We are thinking, for example, of the
frequency with which some of those aforementioned areas of focus have been enabled by
particular—humanist—models of the self, of the ill and suffering body, and of modes of
intervention and care. They have also been (too) often characterised by a dogged focus on the
limitations of biomedical knowledge, and on how the humanities might bring empathy to clinical
practice if allowed adequate epistemological space. Contributions to this special issue disrupt
those models and the implicit disciplinary responsibilities that underpin them.”
who was diagnosed by American doctors with epilepsy. According to the Hmong family, the child was possessed by a spirit. The insistence of both parties upon the authority of their own diagnosis, and the difficulties they faced communicating across linguistic and cultural barriers, played a role in the child’s early death. Fadiman herself walks a careful path between social constructionism and the essentialist orientation of biomedicine. This path, she shows, is necessary if we are ever to reconcile multiple experiences of the body, health, and disease.

An important step on that path, as Barbara Duden articulates most clearly, is an understanding of “the sociogenesis of our own body.” While Duden, focusing as she does on modern medicine and biology, assumes that this “sociogenesis” has taken place only over “the past two hundred years,” her insistence upon unravelling the threads through which conceptions of the body become “self-evident” as “unchanging biological reality” are pertinent in the study of the ancient world also.

The challenge, then, is to move beyond the body as a natural given without simply transferring the creative power from “nature” to “culture” (or “society”). “We will begin,” write Nancy Schepner-Hughes and Margaret Lock in their prolegomenon to future work in medical anthropology, “from an assumption of the body as simultaneously a physical and symbolic artefact, as both naturally and culturally produced, and as securely anchored in a

52 Fadiman 1997.
53 See especially the closing discussion in Fadiman 1997, 250–77, including arguments for how medical practitioners might adopt specific practices for better engaging with patients’ own cultural and therapeutic frameworks.
54 Important studies of spirit possession in medical anthropology include Seligman and Kirmayer 2008; Seligman 2010.
56 Thus, Barad 1996 and 2007 advocate “meeting the universe [sc. nature] halfway.” For an in-depth historiography of this question through to the mid-eighties, see Duden 1991 [1987], 1–49. More recently, scholars have adopted Haraway’s term “natureculture” (also now the name of a journal). See especially Haraway 2003.
particular historical moment.”57 Sarah Franklin, similarly, writes that “The very parts [of a cell nucleus] become visible in an ethnographic encounter that demonstrates how a biological form emerges through a social one, that is, how a nucleus emerges through explanation. ... there is no such thing as a biological fact that has not been elicited through a cumulative social and historical process. Indeed, biology is nothing less than socially-processed ‘nature’.”58

Various methods have been proposed, many of which involve documenting the mutually formative interactions, sometimes articulated as feedback loops, between cultures and bodies.59 Such studies attempt, by recognising that bodies are in open transformation, to neutralise the supposition of a “beginning” body, prior to cultural inflection or change: Rather, bodies come into existence precisely through their articulation.60 This critique of social constructionist thought has been fundamental to the recognition of cerebral (and bodily) “plasticity” as a conceptual tool within body studies.61 Just as our brains remake themselves, continually reinscribing themselves into new patterns and functions, so we make and remake ourselves (as body-minds) through our experiences and through our modes of self-care.62

58 Franklin 2003, 82.
59 Hacking 1986 explores the “feedback loop” whereby social categories come to be embodied. Lock 1993b suggests “local biologies” as a term to capture the biological differences produced by and within distinct cultural groups.
60 Duden 1991 [1987], 6: “if we start from the assumption that the imagination and perceptions of a given period have the power to generate reality, we can approach phenomena that are usually rendered invisible because of some a priori axiom of what is natural.” See also the important work of Grosz 1994.
61 Specifically within affect theory—for example, Brennan 2004. Dumit 2014 examines the cultural constraints of neuroscientific experiments into brain plasticity, and suggests ways in which anthropology might expand the range of possibilities for what neurons are considered able to do.
62 Pitts-Taylor 2012, 173 suggests the implications of brain plasticity for the sociology of the body. Nanoglou 2012, 160–65 discusses the notion of plasticity in body archaeology, as a strategy for engaging with ontological questions about “the body.”
At stake in these negotiations is materiality.\textsuperscript{63} If bodies are “socially” constructed, then what are they constructed out of? Even in accounts of looping and bio-feedback, there is an assumption of underlying matter, an “already there.”\textsuperscript{64} New materialists, as we have already seen, are invested in this question as fundamental to moving past the tenacious binaries of nature and culture, body and mind. According to Noela Davis, new materialism emphasises the “hologrammatic” inseparability, the “entanglement” of biology and society, in contrast to the social constructionist emphasis upon “the relationship between biology and sociality” as always that of a “hybrid, that is, a joining of two unlike things.”\textsuperscript{65} One of the most salient questions in contemporary philosophy of science and medicine is whether we can (or should) effectively theorise “sociality” and “biology” not as two entities in relationship to one another, but as two aspects abstracted, more or less arbitrarily, from a unified phenomenon. This question has implications not only for how we think about bodies, brains, and scientific knowledge, but also for the relationship between the sciences and the humanities, especially with regard to their proper realms of epistemological authority.

Historians interested in the mind–brain sciences are particularly invested the question of materiality, for the reason that the material brain dominates current psychological, neuroscientific, and psychiatric discourse. How are we to reconcile information about brain states with subjective experience?\textsuperscript{66} How does knowledge about the physical and chemical

\textsuperscript{63} Butler 1993 brought this to critical attention.
\textsuperscript{64} Duden 1991 [1987], 6: “All the studies I have mentioned implicitly presuppose something like a nonhistorical (biological) matter of the body, which is then molded by time and class, on which ‘culture is imprinted’ or which is ‘culturally shaped’. The matter itself always remains a given.”
\textsuperscript{65} Davis 2009, 75–6.
\textsuperscript{66} Neuroscientists such as Oliver Sacks (1985), Antonio Damasio (1991), and V. S. Ramachandran (1998) have led the way in translating neuroscientific findings into popular accounts of the relationship between brain states and subjective experience.
makeup of the brain contribute to, or even constitute our conceptions of ourselves? Interest in these questions derives in part from the corporeal and material turns—the (re)introduction of the material body into considerations of subjectivity and so-called “mental” processes. The uprooting of the notion that mental processes might be separated from the body has itself been part of a broader theoretical overhaul of the Cartesian principles that have long structured Western thinking about how people work. This overhaul has involved reasserting the importance of the body as the ground of mental activity. For some, this involves integrating neuroscientific findings with philosophical accounts of subjectivity. Others prefer a phenomenological approach, observing that the body beyond the brain is an intelligent organism, attuned and responsive to its environment, experiencing and enacting emotional states as well as kinds of knowledge outside of the cerebral cortex.

Nonetheless, the brain remains central to modern subjectivity. It is increasingly drawn into the arts and humanities not as an object of study, but as a lens, a way of seeing, a

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67 Dumit 2003; Rose 2003; Vidal 2009; Bassiri 2012; Pickersgill 2013.
68 Sheets-Johnstone 2009; Tambornino 2002. See Holmes 2010, 4–9 on the invention of the body in classical antiquity, as a response to the attention focused by other scholars upon the invention of the soul or the mind. The force and the challenge of this pressure against dualistic thinking is reflected in the remarks of Noela Davis, who summarises new materialist critique of Judith Butler’s *Bodies that Matter*: “It is this closing off of investigation, the inability of risking that matter and bodies might actually be thinking, actively conversant, cognisant material that is, to generalize, the objective of new materialist critiques of Butler” (Davis 2009, 77).
70 Churchland 1986; Damasio 1999; McGilchrist 2009.
71 Sheets-Johnstone 1992; Wilson 2004 (especially regarding the gut); Gallagher 2014. Leder 1990 takes a phenomenological approach in order to reveal the “absence” of the body, that is, its invisibility in our self-perceptions.
72 Vidal 2009.
As such, it is difficult to see the brain as susceptible to a social constructivist explanation, at least in a responsible fashion. If the invisibility of the brain encouraged a distinction in medieval and early modern philosophy between material body and immaterial mind, then contemporary visualisation of the brain chiefly through the lens of biomedicine and neuroscience discourages a separation of the brain from our sensory and epistemological faculties.

The term “conceptual object,” which Brooke Holmes has used to capture the divergent threads of “body” (σῶμα) as discursive construct and body as material, livable thing, is a tool apt for penetrating this thicket. Helpful also is Karen Barad’s account of how discursive construction (in her terms, “agencies of observation”) and “object” are entangled: Insisting that our distinction “between the agencies of observation and the object” is the fundamental Cartesian “illusion,” she goes on to argue for a middle ground between realism and social constructionism, since “there are social and material reasons for knowledge claims—the intra-actions of the material and the discursive are the technologies of embodied objectivity—and socially constructed knowledges have real material consequences.” The “brain” as a conceptual object emerges out of the “intra-actions of the material and the discursive,” formulated in human understanding, but (like human understanding itself) in no way abstracted from the material realm.

This dissertation does not seek to develop a new theory about the entanglement of the biological and the social. While this question is relevant to the study of the brain in antiquity, is one too large for this dissertation, and must await future conversation. My attention here is focused rather on re-engaging social constructionism as a framework for thinking about how

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73 On scientific paradigms, see Kuhn 2012 [1962]. On paradigms (conceptualised as “horizons”) in other disciplines, see Gadamer 1989 [1960].
74 Barad 1996, 188. Barad understands “matter” to be not an “object” but a “process.”
knowledge of bodies and their well-being is produced and reified, at a particularly important point in social and intellectual history. This was the moment at which Greco-Roman medical theories, which were to become the foundation for modern biomedicine, encountered and were appropriated by Christian preachers and theologians, who were the authors of some of the most influential psychological theories in history. What did these early Christian authors have to say about the brain that they encountered in medical texts? How did they alter it? How did it shape their understanding of the human being and the human soul?

Contemporary scholarship on the brain is troubled by the question of how to avoid both materialist reductionism (the brain is the mind) and dualism (the mind, or indeed the brain, is a substance set apart from the body). For historians of the brain, meanwhile, the central question must be, not “what is the brain,” but rather, how did the brain assume the importance that it holds as the organ of mind?

These are the questions which drive the chapters that follow.

4. Outline

Chapter One traces the concept of the “brain” in Greek and Latin texts from the medical and philosophical traditions from pre-Socratic philosophy to the anatomical investigations of the medical writer, Galen of Pergamum. The purpose of this chapter is to provide a scientific backdrop for examining constructions of the brain in late antique Christian texts, with particular attention to the participation of the brain in two overlapping, but increasingly divided, spheres of human existence, the body and the soul.

Chapter Two examines philosophical and theological engagement with the brain in fourth- and fifth-century Christian texts, focusing upon a question that challenged many late
antique authors: What is the role of the brain in the relationship between body and soul? At the centre of this chapter are two texts transmitted under the name of the philosophical bishop Gregory of Nyssa: *On the constitution of the human being* and *On the nature of the human being*. The first of these texts is still considered to be Gregory’s work. The second is now widely and probably accurately attributed to his contemporary, the bishop Nemesius of Emesa. The first part of this chapter examines the images which Gregory invokes to make sense of the brain, highlighting Gregory’s negotiation between different models of the body/soul relationship (temperamental; local; instrumental). The second part of the chapter turns to Nemesius’s exposition of ventricular localisation in his treatise *On the nature of the human being*, and argues that this wildly successful model was not so much a form of “localisation” as it was of “instrumentalisation.” The rational soul uses the ventricles of the brain, but is not contained therein. Nemesius is often celebrated as the lonely voice of up-to-date brain science in late antiquity, but reading his work against contemporary engagements with the body/soul problem reveals that his medically informed account is closely aligned to the questions and concerns of his contemporary theologians.

**Chapter Three** examines late antique anxieties about damage to the brain as a threat to the soul, in particular through gluttony, wine, and perfume. The foremost representative of this concern is the prolific preacher and bishop of Constantinople, John Chrysostom. This chapter argues that Chrysostom uses a rhetoric of cerebral vulnerability—that is, a twin emphasis upon both the vulnerability of the brain to damage and disease, and the importance of the brain for self-governance and thought—to justify his own interventions into the bodily self-care of his congregants as directed toward the health of their souls. Furthermore, Chrysostom presents
cerebral hygiene as a sociopolitical responsibility. That is, the health of one’s brain has an impact upon the health of one’s community.

Whereas Chapter Three explores the consequences of avoiding ascetic practice, Chapter Four highlights the danger that excessive asceticism can pose to the brain. Travelling from deep within the Egyptian desert to the coastline of North Africa, this chapter demonstrates the potency of cerebral disorder as a model for the most damning of spiritual illnesses, vainglory. As we shall discover, this connection was not limited to individual cases of affective disorder, but became the basis for a far broader medicalisation of religious difference.

At the core of this dissertation is a concern with how medical and moral discourses intersect. The brain, as a source of governance within the body, as the site of the mind or soul, offers fertile ground for mapping out expectations and concerns about human behaviour, affect, and cognition. This dissertation poses the question of how the brain emerged in this leading role as a locus of moral and spiritual debate in the early centuries of Christian rule. The genealogy which emerges suggests avenues of influence that have vanished from contemporary narratives of cerebral history, but that continue, nonetheless, to shape our understanding and our conceptualisation of the brain.
I.

The Brain in Ancient Medical and Philosophical Traditions

It is an oversimplification to state that for the Middle Ages, natural science only explains the first chapter of Genesis, but it is an oversimplification which contains a grain of truth.¹

But as St. Augustine says, in the head, “three ‘ventricles of the brain’, so to speak, have been constructed: One at the front toward the face, from which comes all perception; another at the back toward the neck, from which all movement arises; and a third between the two, in which memory has been shown to flourish.”²

Recent scholarship has challenged the traditional view, described by William Sharpe in the first quotation above, that the bloom of Greco-Roman scientific inquiry faded in late antiquity.³

While it remains true that most medical texts of the period are “secondary” in nature—compendia, encyclopaedias, summaries, commentaries—it is no longer the case that these are considered, in Nutton’s memorable and acute formulation, merely the “medical refrigerators of antiquity.”⁴ Rather, historians have begun to insist that we recognise as important

¹ Sharpe 1964, 9.
² Isid., Diff. 2.51 (PL 83, 78B): In capite autem, ut ait sanctus Augustinus, Tres tanquam ventriculi cerebri constituti sunt: unus anterior ad faciem, a quo sensus omnis; alter posterior ad cervicem, a quo motus omnis; tertius inter utrumque, in quo memoria vigere demonstratur. Isidore is referring to a passage from Augustine’s Literal commentary on Genesis, book seven.
³ See Lindberg 2010 for a short account of the classic narrative of decline. Remnant examples of this narrative include Frampton 2008, 211–15, which emphasises the secondary nature of medieval medical literature, esp. 211: “After Oribasius, subsequent generations of physicians, even Greek physicians, became increasingly separated from the original sources of classical medicine by successive layers of medical handbooks, each borrowing from the one before it.” Also telling is ibid., 215: “The meager classical medical, scientific, and philosophical content that was more or less available to medieval western European scholars through the twelfth century was in place by about A.D. 600–650. Very little content was added thereafter to the stock of learned culture that had not already been captured in the handful of Latin translations, encyclopedias, and epitomies produced in the Latin West by the close of late antiquity.”
⁴ Nutton 1984, 2.
epistemological labour the editorial strategies of selection, de/re-contextualisation, commentary, and juxtaposition.\(^5\)

In addition, historians of late antique Judaism and Christianity have begun to recognise the centrality of medical learning to religious discourse and practice, not only as a source for establishing a generic “medical metaphor” (salvation is the healing of the soul), but also for grounding religious authority, theorising ascetic practice, and organising community expectations and norms.\(^6\) Gone are the days when religious texts were mined for scientific and medical references toward the goal of identifying simply how much (or how little) their authors

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\(^5\) Nutton 1984 led the way in urging medical historians to develop new tools for interpreting the “secondary” medical literature that is characteristic of late antiquity. See also Pormann 2010, 421–25; Doody 2010, 1–39 (albeit with reference to earlier literature, that is, the natural encyclopaedia of Pliny the Elder). Pormann 2004, 297 summarises the principles of this new approach well with regard to the Arabic medical tradition: “It is not necessary, here, to enter the debate to what extent the Arab medical writers were innovative or whether they only preserved and transmitted medical knowledge …. Whatever one may think about the topic, one of the greatest achievements in terms of medical literature certainly consists in the ability ... to arrange the subject matter in an intelligent and clear way.” Cf. Sharples and van der Eijk 2008, 32, in their introduction to the work of Nemesius of Emesa: “Whatever hypotheses we may form concerning Nemesius’ sources, and concerning the extent to which material from several remoter sources had already been combined in immediate [sic] sources, the important point, in the end, is that he takes his material and structures in a certain way. ... Nemesius is far from a passive transmitter of material he finds in his sources.” Emphasis my own. Contrast to this Grant 1997, 14, which emphasises the “uncritical” nature of Oribasius’s excerpting and anthologising practices. Grant’s perspective is challenged by Musgrove in her forthcoming dissertation on the “ordering of knowledge” in late antique medical literature, above all in the works of Oribasius.

\(^6\) Rousselle 1988 [1983] and T. Shaw 1998 are critical for their examination of medical expertise as a factor in late antique ascetic discourse; Merideth 1999 examines medical learning in fourth-century theological and pastoral works from the Greek East; Ferngren 2009 collects articles across a long career of engaging with these questions; Crislip 2013 examines religious leaders as healing practitioners. The outpouring of articles by Wendy Mayer (Mayer 2015, 2015b, 2015c, and forthcoming) offers glimpses of Mayer’s long-term project, which is a thorough investigation into the medical learning of one of the more neglected (but the most prolific of) late antique Christian authors, John Chrysostom.
knew about contemporary science, and what their sources were. Far more important in contemporary scholarship is the analysis of how religious authors used their scientific expertise, with what caveats, and to what ends.

Religious authors of late antiquity are not merely “refrigerators” and recipients (active or otherwise) of earlier medical literature; rather, they constitute our richest resource and most illuminating window into developments in medical science and the popular medical tradition during the fourth and fifth centuries CE. While few medical texts survive from this period, Christian literature explodes with theoretical treatises, letters, and sermons, many of which are thoroughly imbued with the “medical metaphor” of salvation as the healing of the soul, sin as an illness or injury, and God, Christ, and clergymen as one’s primary physicians. At times they convey medical models that resemble, in broad strokes, the tenets of contemporary medical

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7 See the important, but now outdated work of Keenan 1936 and 1939 (Augustine) and 1941 (Gregory of Nazianzus); Skard 1937, 1938 and 1939, and Lammert 1941 (Nemesius of Emesa); Wallace-Hadrill 1968 (comparative). On the importance of Quellenforschung in earlier scholarship on late antique philosophy and medicine, see Sharples and van der Eijk 2008, 23–4.
8 Thus, Gilbert 2014 prefaces the examination of Gregory of Nyssa’s anthropological text On the constitution of the human being with a discussion of the question, “What is the organ of the hégeimonikon?” in Philo (8–61) and in the medical and philosophical tradition (62–129). For a broader array of studies, see Boudon-Millot and Pouderon 2005; Marx-Wolf and Upson-Saia 2015. Among individual Christian authors, Gregory of Nyssa has received significant attention: R. D. Young 1993; Bishop 2000; Lallemand 2005; Ludlow 2009; Wessel 2009 and 2010a. His contemporary Nemesius draws explicitly upon scientific texts, but has received little attention, outside the important contributions in Boudon-Millot and Pouderon 2005: Halton 1989; Boudon-Millot 2005; Debru 2005; Boulnois 2005; Beatrice 2005; Wessel 2010b. For general reflections on the relationship between science and religion in eastern orthodox Christianity, see Buxhoeveden and Woloschak 2011, particularly Karras 2011 and Woloschak 2011.
9 Lançon 2005, 229–230, coins the term nosomonde to describe the pervasive “perception of humanity as sick” (my translation). See also the illuminating discussion in Fournier forthcoming. I am grateful to Eric Fournier for permitting me to read his essay prior to publication. On the figure of Christus medicus, see Arbesmann 1954; Dörnemann 2003; Vannier 2005; Dörnemann 2013. It must be noted that more medical literature survives from this period than one might think, given the dearth of scholarship on, for example, Oribasius, Vindicianus, Theodorus Priscianus, and Alexander of Tralles, whose texts remain largely untranslated.
At other times they suggest adaptations of known medical systems that might be interpreted either as their own elaboration, or as reflections of alternative medical systems and philosophies that have not survived. On some rare occasions, they transmit medical ideas which are non-Galenic, but which were to become canonical in later medical doctrine.

This chapter explores the medical and philosophical resources which fourth- and fifth-century Christian intellectuals had at their disposal in their various responses to, and elaborations upon, the concept of the “brain.” My central goal is to establish a conceptual framework within which to locate the brain as it appears in early Christian texts. A secondary, but nonetheless important goal is to demonstrate the extent to which the brain participated in both physiological and psychological spheres. One challenge in studying the brain in antiquity is the temptation to assume a teleological or presentist (also known as a “whiggish”) perspective, wherein the “true” concept of the brain to be discovered is that of the brain as the organ responsible for mental and psychological activities, that is, the brain as the organ of the soul. Yet, even though this

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10 In many cases this was Galenic. On “Galenism” in late antiquity, see fn243, below.

11 Consider, for example, Gregory of Nyssa’s On the constitution of the human being, which in chapter thirty grounds itself in “Galenic” principles, including the tripartition of psychic powers between brain, heart and liver, but which earlier on (chapter twelve) rejects at length the medical localisation of rational thought within the brain. We shall discuss this text further in chapter two, below. A well-known example of a Christian theologian who uses non-Galenic medical literature to support his own anthropological writings is Tertullian, whose treatise On the soul depends to a large extent on the Methodist physician Soranus (see the brief discussion in Sharpe 1964, 16, and the longer analysis in Karpp 1934); see also Gourevitch and Gourevitch 1998, which suggests that Augustine draws upon the writings of Caelius Aurelianus, who translated and adapted Soranus’s corpus into Latin.

12 For example, ventricular localisation, which I examine in chapter two.

13 This critique was most famously voiced in Butterfield 1931. As Butterfield argues, arguing toward the present encourages the smoothing out of variation, contradiction, and alternative experience.
understanding of the brain was prevalent by the fourth and fifth centuries, it was by no means uncontested.¹⁴

Nor was it comprehensive. The brain was not only the instrument through which the soul effected thought, distributed sensory power, and dispatched commands for the movement of the limbs. It was also a large organ, wet and phlegmatic, that filled the head and absorbed excess fluids and rising vapours from the rest of the body. The moisture of the brain caused hair to grow, and according to some provided the basis for human seed. When the brain became too wet, it might discharge its moisture through the nose, through the eyes, through the mouth, or into the rest of the body—this last being the most dangerous alternative. Dryness of the brain, meanwhile, could lead to fever.

It is vital to situate the brain within this ecosystem of the body for two reasons. First, late antique Christian authors, apart perhaps from Nemesius of Emesa, are interested in the physiology of the brain not primarily with regard to its ventricular organisation, but rather with regard to its role in the circulation and dispersal of vapours and fluids.¹⁵ This has been overlooked in studies of the development of brain science in late antiquity, perhaps because it does not contribute to the narrative of progression toward contemporary neuroscience as obviously as does ventricular localisation, which initiated an enduring quest to map psychic

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¹⁴ See the critical engagement of Isidore of Pelusium and Gregory of Nyssa, which I discuss in chapter two.

¹⁵ See, for example, the epigraph to this chapter. For the intersection of the two models, see von Staden 1989, 249: “What remains unanswered by the ancient sources is, however, the relation of this view of the brain and the nerves [i.e., the ventricular model, discussed further below] to Herophilus’s humoral theory. It is unclear, for example, whether Herophilus would have agreed with the Hippocratic author of On the Sacred Disease that the ‘corruption’ of the brain is caused by humours, above all phlegm and bile.”
functions across regions of the brain. In addition to laying conceptual and terminological groundwork for later chapters, therefore, this chapter also challenges the conventional focus upon the psychological aspect of the brain to the exclusion of its physiological role. By examining the brain both as the instrument of the soul and as an organ within the body, we will begin to develop a clearer understanding of the brain’s position on the boundary between body and soul in early Christian thought.

1. Pre-Socratic Philosophers (6th and 5th Centuries BCE)

The earliest Greek philosopher reported to have spoken explicitly about the brain is Alcmaeon of Croton (c. 500–420 BCE). Perhaps an adherent of the Pythagorean school of philosophy,

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16 See, for example, R. M. Young 1970 (a classic historical study of cerebral localisation in the modern period as the intersection of psychology and physiology); Star 1989 (the institutional contexts of modern theories of cerebral localisation); Manzoni 1998 (referring to ventricular localisation as “the dawn of brain localization of function”); van der Eijk 2008 (on ventricular localisation as “early brain mapping”); Guenther 2015 (examining the convergence of psychoanalysis and neuroscience through the lens of cerebral localisation). Note, of course, that contemporary neuroscience is deeply interested in the physiology of the brain—my point is not that progressivist narratives emphasise dualism, but rather that the mapping of cognitive and sensorimotor functions is paramount.

17 On Alcmaeon’s theory of perception, see Beare 1906, 11–3 (vision), 93–4 (hearing), 131–33 (smell), 160 (taste), 180 (the absence of touch). On Alcmaeon’s theory of voluntary motion, see Frampton 2008, 21–3. Note that Alcmaeon is positioned first of all in both surveys, indicating that he is considered the earliest of all known Greek authorities on the subject. Cf. Harris 1973, 4: “The first Greek writer on medicine of whom tradition affords any coherent outline is Alcmaeon of Croton.” See also von Staden 1989, 155: “The pathophysiological and cognitive significance of the brain was recognized no later than the early fifth century B.C. by Alcmeon of Croton.” Frampton 2008, 34 highlights Theophrastus (Sens. 26.88) as noting Alcmaeon as the first to investigate the poroi connecting the brain to the eyes. See, finally, Lockett 2011, 119, which traces debates in the Anglo-Saxon period back to Alcmaeon. The neuroscientist Robert Doty makes much of Alcmaeon’s innovation in Doty 2007, claiming that “[t]he locus of the mind is not betrayed [sc. in observing the brain itself] and, until the epochal discovery of Alkmaion (Alcmaeon, ca. 500 BC) in the city of Kroton in Magna Graecia, humanity was free to assign thought and mental experience to whatever entity they chose, anatomical or otherwise” (561). Scholarly discussion of Alcmaeon has revolved around two central questions: (1) Did he
Alcmaeon is remembered principally for his contribution to medical science. In particular, he insisted upon a relationship between the brain and the sensory organs, theorising that relationship by means of *poroi* (“channels”) and *pneuma* (“air”). There are three crucial testimonia: The first, chronologically, is provided by the Aristotelian philosopher Theophrastus of Eresos (c. 371–287 BCE), in his doxographic treatise *On the senses*. The second is a brief comment in the doxography attributed to Aëtius (c. 1st/2nd century CE). The third occurs in the Spanish bishop Calcidius’s *Commentary on the Timaeus of Plato* (c. 400 CE).

practise dissection, or is he merely speculating about the anatomy of sensation? and (2) To what extent does Alcmaeon’s model inform later accounts, in particular that of the Hippocratic text *On the sacred disease*? In part, this is a terminological question: Does Theophrastus’s use of *pneuma* in his description of Alcmaeon’s model reflect Alcmaeon’s own usage? And, if so, did *pneuma* mean for Alcmaeon what it was to mean for later authors? See more on this in fn19, below. On the question of whether Alcmaeon actually practised anatomy, see especially Harris 1973, 6; Lloyd 1975; Mansfeld 1975; Longrigg 1993; Perilli 2001 (esp. 56). On Alcmaeon as a precursor for later theories of the brain and the nervous system, see Solmsen 1961, 151–52; Harris 1973, 4–10; Rocca 2003, 21–3; Lo Presti 2008: 17–30 (as a precursor to *On the sacred disease*).

Wellmann 1929 identified Alcmaeon as the *pater medicinae Graecae*; however, the question of whether he was in fact a medical practitioner and practised dissection, as was later claimed, is subject to dispute. On Alcmaeon’s relation to Pythagoras, see Harris 1973, 9–10.

It is important to point out that, when examining Alcmaeon’s conceptualisation of the brain, we are at the mercy of later philosophers, commentators, and doxographers, whose task it was to make sense of and to systematise the theories of the past. To take the latter concept of *pneuma* as an example: In later tradition, as we shall see, *pneuma* was to become a key technical term in physiology, philosophy, and theology. In short, it was the material manifestation of soul, animating the body and enabling functions such as perception, thought, and voluntary motion. At this earlier period, however, *pneuma* simply meant “air”—perhaps, it is true, a special kind of air, such as “breath,” but certainly not the densely theorised concept that it was later to become (see Lloyd 2007, esp. S137). This as two implications for us as readers: The first is that we cannot base our interpretation of these terms on their later, technical meanings. The second, and more problematic, consequence is that we cannot be sure that these were even the terms that Alcmaeon used. The extent to which later authors have mapped later terms and concepts onto what they know of Alcmaeon’s model is unclear (see the cautionary note in von Staden 1989, 155fn45).

On “Aëtius” and the history of reconstructing the text now attributed to him, see Mansfeld 1989; Mansfeld and Runia 1997; Runia 1999a, 1999b.

Somfai 2004 makes the case, counter to received opinion, that Calcidius is not a mere copyist, but an original thinker. This growing interest in Calcidius is reflected also in the recent studies by philosopher Gretchen Reydams-Schils (2006; 2007).
We begin with Aëtius, with whose encyclopaedic collection of opinions late antique Christian authors, especially those not trained in medicine or philosophy, may well have been most familiar. According to the fifth-century compiler Stobaeus, Aëtius recorded the following fact: “Alcmaeon [said that] the governing part of the soul (τὸ ἕγεμονικόν) is in the brain, and therefore one smells by means of this [organ] dragging odours through the airways.” The word ἕγεμονικόν is a technical term, which probably originated in Stoic teachings. Aëtius here applies the term retrospectively to Alcmaeon’s thought. As Philip van der Eijk writes, “the question ‘What is the leading principle in man and where is it located?’ more or less assumed a life of its own in late antiquity, separate from the scientific context from which it originated.” The ἕγεμονικόν, which was used interchangeably with the Platonist term logistikon (“the rational part of the soul”), encompassed the activities of thought, perception, and voluntary

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22 The importance of encyclopaedias and other such “secondary” literature in late antique philosophy and medicine is widely known (e.g., Pormann 2010, 421–25), and has been much decried on the grounds that such texts are not “original.” See Nutton 1984 for the argument that we should take encyclopaedias, commentaries, and summaries seriously as contributions to the field of medicine in late antiquity.


24 See fn187, below.

25 Van der Eijk 2005a, 121, but see also 119–23. Van der Eijk is discussing a similar doxographic account, which appears in Caelius Aurelianus’s On acute diseases, which I discuss further in chapter five. Van der Eijk bases his understanding of doxography on the work of Mansfeld and Runia. On the ἕγεμονικόν in doxographic tradition, see Tieleman 1996, xxxiv–xxxv; Runia 1999b, 232–33.
motion. On this account, Alcmaeon is regularly cited as the first known proponent of the “encephalocentrist” position.

If Alcmaeon did not use the term ἡγεμονικόν, then what precisely did he locate within the brain? One possibility is suggested by the second part of Aëtius’s testimony: “one smells by means of this [organ] dragging odours through the airways.” Geoffrey Lloyd connects this passage with the testimony of Theophrastus, which we shall examine shortly: “Here as elsewhere,” Lloyd writes, “Alcmaeon evidently imagined the process of sensation as involving the transport of πνεῦμα to the brain.” The activity of the brain involves, at a minimum, the perception of smell, and, more probably, all of the senses.

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26 Tieleman 1996, 26: “By Galen’s time the term ἡγεμονικόν had long ceased to be exclusively Stoic. He and many others use it interchangeably with the originally Platonic term λογιστικόν.” Rocca 2003, 18–21, and Gilbert 2014, 9–28, each provide a lucid and thorough account of the ἡγεμονικόν in the Greek medical and philosophical traditions. Rocca’s telos is Galen, while Gilbert looks ahead to late antiquity. We shall consider this term further below.

27 Longrigg 1993, 60: “As a result of his investigations into the physiology of the sense organs Alcmaeon concluded, then, that the brain was the seat of intellectual activity. He thus became one of the earliest protagonists in the debate as to whether the heart or the brain was the centre of intelligence.” Cf. Manuli and Vegetti 1977, 9–10; Clarke and O’Malley 1996, 1–3; Ochs 2004, 10–1.

28 Lloyd 1975, 122.

29 Did Alcmaeon’s brain perform intellective functions such as thought in addition to perception? Solmsen 1961, 152 thinks not: “It is very doubtful whether Alcmaeon ascribed to the brain any activity independent of the senses and other than the correlation of their reports.” Theophrastus provides an additional important testimony supporting this conclusion: “For he says that the human being differs from other creatures ‘because it alone understands (ξυνίησι), while the other creatures perceive (αἰσθάνεται) but do not understand (ξυνίησι)’, since thinking (τὸ φρονεῖν) and perceiving (αἰσθάνεσθαι) by sense are different things, and not, as Empedocles thought, the same.” Theophr., Sens. 25.2–5 = A 5 DK: ἄνθρωπον γὰρ φησὶ τὸν ἄλλον διαφέρειν ὅτι μόνος ξυνίησι, τὰ δ’ ἄλλα αἰσθάνεται μὲν οὐ ξυνίησι δὲ, ὡς ἔτερον ὑπὲρ τὸ φρονεῖν καὶ αἰσθάνεσθαι, καὶ οὐ, καθάπερ Ἐμπεδοκλῆς, ταύτων. Alcmaeon’s separation of sensation from thought (which, according to Laks 1999, 257, was “a matter of course”) lends credence to Solmsen’s conclusion. Alcmaeon’s model of brain function has explanatory power for both animals and humans. How humans think, and whether this process involves the brain, remains unclear. See Laks 1999, 255–62 on the separation of sensation and thought in pre-Socratic philosophy.
Theophrastus confirms this: “All the senses are connected in some way with the brain; consequently they are incapable of action if it is disturbed or shifts its position, for it stops up the passages (τοὺς πόρους) through which the senses act.” 30 Theophrastus condenses much information in this statement. We learn (1) that the brain is connected to all of the senses, which (2) act through passages known as poroi. In addition, (3) we receive our first indication of what happens when the brain goes wrong. The consequence of physical movement is that the brain blocks the poroi, and thereby prevents sensory activity. Alcmaeon’s explanation of sensory disruption as the consequence of cerebral disturbance fits snugly within the project of pre-Socratic natural philosophy, which Charles Kahn has characterised as “an attempt to understand the phenomena of nature in purely physical or mechanical terms.” 31

The notion that perception operates via poroi (or other passageways) between the sensory organs and an organ of common perception was to become common in Greek medicine and philosophy. 32 Consider the testimony of Calcidius: “there are two narrow passageways [semitas] which contain natural spirit, and which wander from the seat of the brain, in which the highest and ruling power of soul is located, to the hollows of the eyes.” 33 Calcidius refers this knowledge to Alcmaeon of Croton, Callisthenes the student of Aristotle, and the Hellenistic medical author Herophilus of Chalcedon. As a number of historians have pointed out, the terminology used in

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31 Kahn 2013, 2.
32 For further discussion of poroi in Alcmaeon, see Mansfeld 1975, 33.
33 Calc., Comm. in Plat. Tim. 246 = A 10 DK = Herophil. t. 86 von Staden: duas esse angustas semitas, quae a cerebri sede, in qua est sita potestas animae summa ac principalis, ad oculorum cavernas meent naturalem spiritum continentes. On this testimonium, see esp. the close reading in Mansfeld 1975.
Calcidius’s account can more readily be attributed to Herophilus than to Alcmaeon. Calcidius’s account can more readily be attributed to Herophilus than to Alcmaeon. “Natural spirit” (naturalis spiritus = φυσικὸν πνεῦμα), in particular, was a development of the Hellenistic period. Nonetheless, it is evident that Alcmaeon’s triangulation of brain, poroi, and sensation appeared, to late antique authors at least, as a compelling antecedent for later anatomical investigations. Indeed, contemporary scholars continue to debate the question of whether Alcmaeon’s poroi denote the optic nerves.

Pneuma was important to Alcmaeon’s model also. In the passage from Aëtius quoted above, we saw that Alcmaeon explains smell through the passage of “odours” (ὀσμάς) through the nostrils. Theophrastus provides a more precise material description: “Smelling is by means of the nostrils in connection with the act of respiration when one draws the pneuma to the brain.”

At the most fundamental level, pneuma meant simply “air” or “breath.” In this sense, Alcmaeon’s theory of smell is consistent with much later traditions, wherein the air entering the nasal passageways alters the quality of the brain, by acting upon the pneuma within. In Calcidius’s testimony, however, we saw that “natural spirit,” that is, “natural” pneuma, is contained within the poroi also. Did Alcmaeon believe that pneuma circulated within all of the poroi, and thus transmitted sensory information or sensory power to the sensory organs?

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34 Mansfeld 1975, 32–3.
35 See part three, below.
36 Harris 1973, 6–7 (passages referred to in Harris’s index as “discovery of the optic nerve”); von Staden 1989, 155; Rocca 2003.
37 Theophr., Sens. 25.7–8 = A 5 DK: ὀσφραινεσθαι δὲ ρισίν ἄμα τῷ ἀναπνείν ἀνάγοντα τὸ πνεῦμα πρὸς τὸν ἐγκέφαλον.
38 See my discussion of smell in chapter three.
39 C. Smith et al. 2012, 13 observe that this might “be the first recorded instance of pneuma being regarded as somehow involved in the transmission of physiological information.”
question must remain open, but nonetheless continues to attract attention precisely because this proved to be one of the models that is developed in later medical and philosophical texts.40

Among Alcmaeon’s successors was the philosopher Diogenes of Apollonia (fl. 440–430 BCE), who is known as the earliest explicit witness to the idea of “a system of passages in which air (or pneuma) may move within the body.”41 These passageways were not poroi but phlebes (φλέβες), which Diogenes describes in detail in a long fragment preserved by Aristotle (c. 384–322 BCE) in his biological treatise On the history of animals.42 The air that they contained, meanwhile, was not simply breath drawn into the body through the nose or mouth, but was the substance of soul itself. As Aristotle writes in his treatise On the soul:

Diogenes, and others similarly, [said that the soul is] air (ἀέρα), since he thought that this was of all things finest in composition, and a first principle, and that because of this the

40 On the relationship between pre-Socratic philosophy and Hippocratic medical theory, see Longrigg 1989.
41 Rocca 2003, 23. According to Frampton 2008, 69–70, Diogenes is the first to discuss pneuma in a systematic fashion. Solmsen 1961, 153–54 notes the similarity between the views of Alcmaeon and Diogenes, but emphasises that we should not assume on this account that Diogenes operated with an “encephalocentist” model. Laks 2008 and Graham 2009, 277–93 offer important rereadings of Diogenes as a significant contributor to later philosophy, in contrast to conventional opinion (see Lloyd 2006, 238 for a brief survey of such opinions). Laks 2008 provides an edition and translation of Diogenes’s works, together with substantial commentary; see Graham 2010, 434–61 for English translations of the fragments. The ancient testimony’s on Diogenes’s career is provided in DL 9.57 (Long 1966).
42 Arist., HA 3.2, 511b31–512b11 = B 6 DK = Diog. Apoll. fr. 10 Laks. Harris 1973, fig. 2 and Laks 2008, 96–7 provide diagrams of the network of phlebes as described by Diogenes. This description is the basis for Diogenes’s renown among modern physicians as the pioneer of vascular anatomy: See, for example, Crivellato et al. 2006 (and cf. Harris 1973, 20). In contrast to this, historians of ancient philosophy and medicine continue to puzzle over what precisely Diogenes intended by the term phlebes. J. R. Shaw 1977, for example, argues that they are not to be understood as blood vessels, but as channels for the air. Graham 2010, 460, meanwhile, assumes that Diogenes is describing the circulatory system, which he assumes contains both blood and air. Lloyd 2006, 237 explains his translation of phlebes as “ducts” on the grounds that “their contents may include blood, air, or semen” (cf. 252). Harris 1973, 21–4 translates phlebes as “veins,” and then clarifies that “there is no distinction made between arteries and veins, both are called φλέβες” (10). Cf. Laks 2008, 98. See also Harris 1973, 26 for some of the background to this debate.
soul possessed the faculty of knowing and moving. Insofar as it was the first [principle], from which everything else derives, it knows; and insofar as it is the finest in composition, it has motor power.43

Once again, Aristotle’s own theoretical commitments frame Diogenes’s conceptualisation of “air.” As we shall see shortly, “connate pneuma” (σύμφωνον πνεῦμα) was fundamental to Aristotle’s own account of voluntary motion. Nevertheless, the importance of air, and above all of breath, as the substance of soul and the site of human perception and intelligence in Diogenes’ thought is clear.44 As the sixth-century philosopher Simplicius reports in his commentary on Aristotle’s Physics:

He adds that human beings and other creatures live and have soul and intelligence from this source, that is the air (ἄηρ), speaking as follows: “On top of these things, moreover, there are the following significant signs. For human beings and other creatures, breathing, live by air. This is also their soul and intelligence, as will be clearly explained in this work, and if it leaves, they die, and intelligence fails.45

All living creatures, according to Diogenes, receive their soul and intelligence from the air that they breath, which, because its absence means death, is identified as soul and intelligence also.46

Theophrastus adds to Aristotle’s account that “Diogenes joins the senses, just like living (τὸ ζῆν) and thinking (τὸ φρονεῖν), to the air (τῷ ἀέρι).”47 His explanation of how sensory

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43 Arist., DA 1.2, 405a21–5: Διογένης δ’ ὅσπερ καὶ ἕτεροι τινες ἄερα, τούτον οἴηθεις πάντων λεπτομερέστατον εἶναι καὶ ἄρχην· καὶ δία τούτο γινώσκειν τε καὶ κινεῖν τὴν ψυχήν, ἣ μὲν πρῶτον ἔστι, καὶ ἐκ τούτου τὰ λοιπά, γινώσκειν, ἣ δὲ λεπτότατον, κινητικὸν εἶναι.
44 We find, furthermore, if we branch out from the psychological works, that air is not only the substance of soul, but is in fact the material basis of all things. 45 Simp., Phys. 9.152.16–21 = B 4 DK = Diog. Apoll. fr. 8 Laks: ἐπάγει, ὅτι καὶ ἄνθρωποι καὶ τὰ ἄλλα ζῶα ἐκ τῆς ἄρχης ταύτης, ἤτις ἐστὶν ὁ ἄηρ, καὶ ζῆν καὶ ψυχήν ἔχει καὶ νόησιν, λέγουν οὕτως· ἓπε δὲ πρὸς τούτοις καὶ τάδε μεγάλα σημεῖα. ἄνθρωποι γὰρ καὶ τὰ ἄλλα ζῶα ἀναπνέντα ζῶει τῷ ἀέρι, καὶ τούτῳ αὐτοῖς καὶ ψυχῇ ἐστὶ καὶ νόησις, ὡς δεδηλώσται ἐν τῷ ὑπὸ τῇ συγγραφῇ ἐμφαντός, καὶ ἔναν τούτο ἀπαλλαχθῆ, ἀποθνῄσκει καὶ ἡ νόησις ἑπλεῖσθαι.'
46 Laks 2008, 40 suggests that there are in fact arguments from two different contexts interwoven in this testimony, with the first arguing that air is to be understood as the substrate of intelligence and life, and the second that air itself is intelligent.
processes work in relation through the medium of the air is by now familiar. In each case, sensation emerges in the triangulation of air, brain, and passageways: (1) “Smell [is brought about] by the air (ἀέρι) around the brain; for this [air] is crowded together and is commensurate with odour; the brain itself, with the ducts (φλεβία), is loose in texture.” (2) “Hearing [arises] whenever the air (ἀηρ) inside the ears, disturbed by that which is outside, passes [this disturbance] on to the brain.” Furthermore, “They hear most clearly, whose ducts (φλέβες) are fine and in whom the passage to the seat of sensation and of hearing is short, delicate, and straight.” (3) “Sight [is] when objects are reflected in the pupil, and this mixed with the air within (τὸ ἐντὸς ἀέρι) brings about sensation. The evidence: If the ducts (φλεβόν) become inflamed (φλεγμασία), there is no mixture with the [air] within, and one does not see, even though the reflection is present.” (4) “But the tongue is the greatest discerner of pleasure, for it is most tender, is loose in texture, and all the ducts (φλέβας) lead into it.”

For later physicians, the phlebes are “blood vessels” (and, after Praxagoras, “veins”), which carry only blood, and which stand in contrast to the “arteries” (ἀρτηρίαι), which carry

47 Theophr., Sens. 39.1–2 = B 19 DK = Diog. Apoll. t. 8 Laks: Διογένης δ’ ὀσπερ τὸ ἦν καὶ τὸ φρονεῖν τῷ ἀέρι καὶ τὰς αἰσθήσεις ἀνάπτει. It is not clear whether it is Diogenes or Theophrastus who identifies “the senses” as separable from “thought.”

48 On Diogenes’s theory of perception, see Beare 1906, 41–2 (vision), 105–06 (hearing), 140–41 (smell), 169–70 (taste), 184 (the absence of touch).

49 Theophr., Sens. 39.3–5 = B 19 DK = Diog. Apoll. t. 8 Laks: τὴν μὲν ὀδορρήσιν τῷ περὶ τὸν ἐγκέφαλον ἀέρι· τοῦτον γὰρ ἀδρον εἶναι καὶ σύμμετρον τῇ ὁσμῇ· τὸν γὰρ ἐγκέφαλον αὐτὸν μανὸν καὶ <τὰ> φλέβια.


51 Theophr., Sens. 41.6 = B 19 DK = Diog. Apoll. t. 8 Laks: ἀκούειν δ’ ὀξύτατα, ὅν αἱ τε φλέβες λεπτοὶ.

52 Theophr., Sens. 40.2–5 = B 19 DK = Diog. Apoll. t. 8 Laks: τὴν δὲ ὅν [ὁραν] ἐμφαινομένων εἰς τὴν κόρην, ταύτην δὲ μηγυμένην τῷ ἐντὸς ἀέρι ποιεῖν αἰσθήσιν· σημείον δὲ· ἔως γὰρ φλεγμασία γένεται τῶν φλεβῶν, οὐ μηγυσθαι τῷ ἐντὸς οὐδ’ ὅραν ὁμοίος τῆς ἐμφάσεως ὀυςής.

53 Theophr., Sens. 43.6–7 = B 19 DK = Diog. Apoll. t. 8 Laks: κριτικώτατον δὲ ἡδονής τὴν γλώτταν· ἀπαλώτατον γὰρ εἶναι καὶ μανὸν καὶ τὰς φλέβας ἀπάσας ἀνήκειν εἰς αὐτὴν.
blood and air, or air alone. Yet, Diogenes’s model is clearly rooted not only in current models of the vascular system, but also in the concept of the poroi familiar from Alcmaeon. The poroi, as we shall discover, are critical to ancient philosophical and medical conceptions of the body.

Conclusion

Pre-Socratic philosophers, insofar as they talked about the brain, focused upon its access to the outside air. The triangulation of the brain (enképhalos), the air (aēr, pneuma), and the passages of connection between the two (poroi, phlebes) was to remain fundamental to all later models of the brain, especially its role in the activity of perception. Mediating the relationship between the body and the outside world, through its absorption of the element air, the brain developed in parallel to the heart as an enlivening source which governed the dispersal of its associated substance through a growing network of passageways, much as a tree put down roots into the soul and split its trunk first into branches, then into twigs. The pre-Socratic brain, celebrated in scholarship as the earliest instance of the “thinking” organ, was above all a site of connection between the animal and the natural world.

This connectivity remained important in later brain science, although it gradually assumed a more marginal role. What became more important in the centuries following was the role of the poroi in connecting the brain not so much to the outside world as to the other parts of the body. As we shall see in part two, whether or not the brain was considered the organ of cognitive and sensorimotor function, its material connection to the other organs remained paramount in its conception, no longer embedding it in the external environment so much as evoking an ecosystem within.
2. Early Medicine and Biology (5th–3rd Centuries BCE)

Part Two explores the poroi, together with the pneuma, as critical to the participation of the brain in the ecosystem of the body within Hippocratic medicine (fifth and fourth centuries BCE) and Aristotelian biology (fourth and third centuries BCE). In addition to the channels and the air that flows through them, it is also critical to explore the role of phlegm (φλέγμα), which threatens to block the channels, but which also highlights certain vital functions of the brain. What follows, then, is a three-part structure: poroi, pneuma, and phlegma. The discussion traces the on-going development of these terms; it also, and more importantly for the project as a whole, establishes a framework for understanding these long-lived concepts as they emerge in later chapters.

i. Poroi

In addition to bridging between Alcmaeon’s brain and the sensory organs, poroi appear in the influential theory of perception ascribed to Alcmaeon’s younger contemporary, the Sicilian philosopher Empedocles (c. 495–430 BCE).54 Aristotle, while he rejected Empedocles’s conception of the poroi as channels for the transmission of material stuff (that is, the particles of sensory information), nonetheless affirmed that poroi filled with “connate pneuma” (more on

54 Empedocles’s theory was that sense organs encounter the effluent particles of sense-objects. If the effluent particle is of the same element (water, fire, air, or earth), and therefore shape, as the sense organ, then the particle enters the poroi therein. The key testimonies are Pl., Men. 76c–d; Arist., Sens. 2, 437b26–438a3; Theophr., Sens. 7. For discussion, of Empedocles’s theory through the lens of Aristotelian reception and refutation, see Johansen 1997, 67–70; cf. also Padel 1992, 41–3; D. Martin 1995, 17–8). Note that Empedocles considered blood (and not air, brain, or heart) to be the substance and the site of thought: Theophr., Sens. 10.7–8 = A 85 DK: διό καὶ τῷ αἴματι μᾶλλα φρονεῖν· ἐν τούτῳ γὰρ μᾶλλα κεκράσθαι ἐστι τὰ στοιχεῖα τῶν μερῶν. Cf. Padel 1992, 43.
this shortly) were essential for the successful functioning of the sensory organs. In this way, he found his place in “a tradition of thinking about poroi and veins as mediating in perception between the sense-organs and the seat of perception.” As we saw in Calcidius’s citation of Alcmaeon and Herophilus together, poroi remained an active anatomical category even after the invention of the “nerves” (neura), and were invoked in particular to denote the optic nerves, probably on the grounds that this was the only category of nerve known for certain to be hollow.

At root, poroi were conceptual structures that enabled theorisation, especially within medical discourse, of how sensory information moves from outside the body into the soul. At the same time, they also made the body vulnerable. “Poroi,” writes Ruth Padel, “begin Western medical portraiture of the infinitely penetrable body.” Porous inside and out, the body was susceptible to outside, potentially dangerous, influences. The flip-side of this was that each

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55 Johansen 1997, 67–95, esp. 73: “We should not speak of poroi as empty passages through which particles travel. We should rather call something a ‘poros’ if it is especially likely to be affected by a quality, or as he puts it, what is ‘such-and-such’ [τοιοῦτον]. For Aristotle, then, a poros is not, as for Empedocles, restricted to, nor does it primarily refer to, something that allows for spatial change. By a ‘poros’ we should understand primarily something that allows for qualitative change since it is especially likely to be affected by a quality. In other words, the poroi are here picked out by their ability to allow for alteration, qualitative change, rather than locomotion.”

56 Johansen 1997, 93. Cf. von Staden 1989, 237: “Poros, a word meaning ‘duct’, ‘passage’, or ‘strait’, had often been used by Greek writers before Herophilus of the sensory channels such as the optic tract.”

57 Further discussion below in parts three and four.

58 Poroi were central to Hippocratic medical theory: Padel 1992, 58–9; Lonie 1965, 128: “In a sense, all Greek medical theories are theories about πόροι.”

59 Padel 1992, 58.

60 See Brennan 2004: 24–7 for a discussion of the “bounded” individual as a construction of Western philosophy and psychiatry. Brennan’s argument is that our porous, embodied condition renders us as subjects less bounded than is assumed in traditional constructions of subjectivity.
body was also sustained through a constant interchange of elements. The concept of poroi in medical theory is one expression of the ancient assumption that the human body is of a piece with the elements surrounding and pervading it, and that the surface of the body is not a sealed boundary. See also the discussion in Holmes 2010, 36 and Karfik 2012, 170–71.

The theory of skin-breathing appears first in a fragment of Empedocles, preserved by Aristotle (B 100 DK = Arist. Resp. 473b9–474a6). For a concise account, see Furley and Wilkie 1984, 3–9. Webster 2014, 36–42 offers a more technical discussion of how skin-breathing might have worked, according to the central analogy in the Empedoclean fragment, a clepsydra.

See chapter three.

We shall consider in part two a key text in which the circulation of air through the brain enables intelligence, On the sacred disease. On pneuma in early Greek medicine, see Harris 1973, 37–8; van der Eijk 2005a, 119–38; Boylan 2015, 34–5.

A fiery soul tends toward quickness of perception, and a watery soul toward slowness and

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61 D. Martin 1995, 18: “The concept of poroi in medical theory is one expression of the ancient assumption that the human body is of a piece with the elements surrounding and pervading it and that the surface of the body is not a sealed boundary.” See also the discussion in Holmes 2010, 36 and Karfik 2012, 170–71.

62 The theory of skin-breathing appears first in a fragment of Empedocles, preserved by Aristotle (B 100 DK = Arist. Resp. 473b9–474a6). For a concise account, see Furley and Wilkie 1984, 3–9. Webster 2014, 36–42 offers a more technical discussion of how skin-breathing might have worked, according to the central analogy in the Empedoclean fragment, a clepsydra.

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64 We shall consider in part two a key text in which the circulation of air through the brain enables intelligence, On the sacred disease. On pneuma in early Greek medicine, see Harris 1973, 37–8; van der Eijk 2005a, 119–38; Boylan 2015, 34–5.

65 Hipp., Vict. 1, 35.1–4: περὶ δὲ φρονήσιος ψυχῆς καὶ ἀφροσύνης ὀνομαζομένης ὃδε ἔχει· πυρὸς τὸ ψυχρότατον καὶ ὕδατος τὸ ἥχοτατον κρῆσιν λαβόντα ἐν τῷ σῶματι φρονιμώτατον, διότι τὸ μὲν πῦρ ἔχει ὑπὸ τοῦ ὕδατος τὸ ἄρρεν, τὸ δὲ ὕδωρ ὑπὸ τοῦ πυρὸς τὸ ἥχον.
stupidity.\textsuperscript{66} Through regimen, the blend of one’s soul (ψυχή) can be improved; equally important, however, are the poroi through which the soul passes:

The blend is not, however, responsible for such [qualities] as follows: irritability, laziness, cunning, sincerity, hostility, kindness. The nature of the passages (τῶν πόρων) through which the soul travels (πορευέται) is responsible for all such things; for they are disposed (φρονέουσι) such in accordance with the quality of the vessels through which [the soul] passes and the kind of thing[s] it encounters and with what kinds of things it mixes. On this account, it is impossible to change such things through regimen, for invisible nature is not to be remoulded.\textsuperscript{67}

Here it is not the external air, but the blend of fire and water which constitutes the soul that circulates through the poroi of the body, maintaining the body’s intelligence (φρόνησις) according to its balance of elements, but manifesting dispositions of soul in accordance with the internal geography of the poroi.\textsuperscript{68}

\textsuperscript{66} Hipp., Vict. 1, 35.13–64.

\textsuperscript{67} Hipp., Vict. 1, 36.6–12: τῶν δὲ τοιούτων οὐκ ἐστὶν ἡ σύγκρησις αἰτίη· οἶδ᾽ ὃξυθυμος, ῥάθυμος, δόλιος, ἀπλοῖς, δυσμενῆς, εὖνους· τῶν τοιούτων ἀπάντων ἢ φύσις τῶν πόρων δι᾽ ὁν ἡ ψυχή πορεύεται, αἰτίη ἐστί· δι᾽ ὃκοιοις γὰρ ἄγειεν ἀποχορεῖ καὶ πρὸς ὁκοῖα τίνα προσπίπτει καὶ ὁκοῖος τις καταμίσχεται, τοιαῦτα φρονέουσι· διὰ τοῦτο γοῦν δυνατὸν τὰ τοιαῦτα ἐκ διαίτης μεθιστάναι· φύσιν γὰρ μεταπλάσσαι ἀφανεά ὁν ὀνό τε.

\textsuperscript{68} Comparable is Plato’s account of the bodily determinants of character in Tim. 86e5–87a7: ότου γὰρ ἢ ἡ τῶν ὀξέων καὶ τῶν ὀλυκὼν φλεγμάτων καὶ ὀσια πικροι καὶ χολοδεις χυμοι κατὰ τὸ σῶμα πλανηθέντες ἔξω μὲν μὴ λάβωσιν ἀνατονοῦ, ἐντὸς δὲ εἰλλόμενοι τὴν ἀρ’ αὐτὸν ἀτμίδα τῇ τῆς ψυχῆς φορᾷ συμμείζαντες ἀνακερασθόσι, παντοδαπα νοσήματα ψυχῆς ἐμποιοῦσι μᾶλλον καὶ ἢντον καὶ ἐλάττω καὶ πλείο, πρὸς τε τοὺς τρεῖς τόπους ἐνεχθέντα τῆς ψυχῆς, πρὸς ὃν ἀν ἔκαστ’ αὐτὸν προσπίπτε, ποικίλλει μὲν εἰδὴ δυσκολίας καὶ δυσθυμίας παντοδαπα, ποικίλλει δὲ θρασύτητὸς τε καὶ δειλίας, ἐτὶ δὲ λήθης ἅμα καὶ δυσμαθίας. “When any of a man’s acid and briny phlegms or any bitter and bilious humors wander up and down his body without finding a vent to the outside and remain pent up inside, they mix the vapour that they give off with the motion of the soul and so are confounded with it. So they produce all sorts of diseases of the soul, some more intense than others and some more frequent than others. And as they move to the three regions of the soul, each of them produces a multitude of varieties of bad temper and melancholy in the region it attacks, as well as recklessness and cowardice, not to mention forgetfulness and stupidity.” Trans. Zeyl (Cooper and Hutchinson 1997). Whereas the author of Regimen argues that the structures of the body impact the humoral-vaporous substance (soul) which flows through them, and thereby also shape affective disposition, Plato suggests that the humoral-vaporous substance (bodily humours) enters the bodily structures in which the different
It is not entirely true that “it is impossible to change such things through regimen.” For those of a more watery psychic constitution, the author advises against “wrestling, massage or like exercises, lest the poroi become more hollow and fill up with excess, for the movement of the soul must be slowed down by such things.” Excess of what is not made explicit, but the context suggests moisture: The preceding lines advise that it is appropriate for such an individual [sc. with a watery constitution] to live by regimens [tending] toward fire and not [to take] excess of either food or drink. They should take sharp runs, therefore, so that the body might be emptied of moisture and the moisture be quickly checked.

Moisture is also suggested by a reference to poroi in Regimen 3: “For mucus and saliva are the crisis of excess; once the body is at rest, they blockade the passages of the air (τοὺς πόρους τοῦ πνεύματος), since there is much excess within.” While the geography of the poroi themselves cannot be altered, attention to appropriate forms of exercise and diet will affect their dilation and their accumulation of excess, which itself would obstruct the passage of soul.

While the author of Regimen 1 describes the soul (a combination of fire and water) moving through the poroi, the author of Regimen 3 associates the poroi most closely with the air (τοὺς πόρους τοῦ πνεύματος). We hear echoes here not only of Alcmaeon’s theory of smell parts of the immaterial soul reside, and shape the individual’s disposition, presumably by affecting these parts.

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69 Hipp., Vict. 1, 35.23–6: πάλησι δὲ καὶ τρίψει καὶ τοῦτοι τοιούτου ιγμινασίουσιν ὡς ξυμφέρει χρέεσθαι, δικοὺς μὴ κοιλοτέρους τὸν πόρον γινομένον πλησιμνῆς πληρῶντα, βαρύνεσθαι γὰρ ἀνάγκη τῆς ψυχῆς τὴν κίνησιν ὑπὸ τῶν τοιούτων.

70 Hipp., Vict. 1, 35.20–3: ξυμφέρει δὲ τοῖς τοιούτους τοῖς πρὸς πυρὸς διαιτίμαις μᾶλλον χρέεσθαι καὶ μὴ πλησιμνῆσθαι μήτε στίων μήτε ποιμάτων. Δρόμοις όμως χρέεσθαι οξέσθαι, δικοὺς τοῦ τε ύγροῦ κενωθάτα τὸ σῶμα καὶ τὸ ύγρὸν ἐφικτήτα πάσσον.

71 Hipp., Vict. 3, 70.14–6: Μύξαι γὰρ καὶ σίκλα πλησιμνῆς ἐστὶ κρίσις· ἀτρεμίζοντος μὲν ὅτι τοῦ σύματος, φράσσουσι οὖν τοὺς πόρους τοῦ πνεύματος, πολλῆς ἐνεούσης τῆς πλησιμνῆς.

72 According to Regimen 2, the soul can also be dried out through the “natural exercises” of “sight, hearing, voice, and thought.” Hipp., Vict. 2, 61.2–3: οὶ μὲν οὖν κατὰ φύσιν αὐτῶν εἰσὶν ὀψιος πόνος, ἀκοῆς, φωνῆς, μερίμνης.
(which occurs when “one draws the pneuma to the brain”), but also of Diogenes’s insistence that the ducts (φλέβες) are filled with air (ἀήρ), which is itself the substance of soul (Aristotle: “Diogenes, and others similarly, [said that the soul is] air (ἀέρα)”). In later periods, this “air” (ἀήρ, πνεῦμα) was to become transformed into the technical but polymorphous concept pneuma (Lat. spiritus).\(^73\) A detailed understanding of pneuma is essential for understanding late antique conceptions of the brain, above all within a Christian framework, where the pneuma of the animate body became synonymous with the Holy Spirit.\(^74\) It is to pneuma, therefore, that we now turn.

ii. Pneuma

The earliest explicit theorisation of pneuma as distinct from the external air appears in the writings of Aristotle (c. 384–322 BCE) as “connate” (or “innate”) pneuma.\(^75\) For Aristotle, connate pneuma is a fifth element in addition to the four mapped out by Empedocles (water,  

\(^73\) Manzoni 1998, 106–08 provides a brief account of the development of pneuma from the earliest extant literary works to Hellenistic medical theory. A helpful survey of pneuma in early medical texts is provided in Hankinson 2006, 234fn9.

\(^74\) Verbeke 1945, 511: “le pneuma nous a introduits au coeur mème de la théodicée, de la psychologie, de l’épistémologie, de la doctrine de l’inspiration, de la médecine, de la magie et de la mystique.”

\(^75\) Freudenthal 1995, 147: “Aristotle’s theory of pneuma can thus be regarded as having replaced the Pre-Socratic’s air (which was the same inside the body and outside it and indeed was also the heavenly, divine substance), with another aeriform substance, namely the connate pneuma produced within the body, the outer air now being taken to refrigerate the body’s vital heat. The identity and providence of the aeriform soul-substance have changed—but its roles largely remain the same.” “Connate pneuma” translates the Aristotelian phrase σύµφυτον πνεῦμα. Peck 1942, 576–93 (App. B) provides a detailed account. Annas 1992, 19 criticises Peck’s attempt “to systematize Aristotle’s scattered remarks into a reconstruction making pneuma central to his psychology; but this is a mistake, given the scattered and unsystematic nature of the evidence.” See further Annas 1992, 17–20. Also important is Solmsen 1961, 174–78.
earth, fire, and air). Analogous with the aither that Aristotle considered to be the material basis of the stars, pneuma found its bodily source within the heart, which was also the source of vital heat. As a material component of semen, it contributed to the formation of embryos. Contained within the poroi, as we have seen, it enabled perception. Contracting and expanding within the heart in relation to the desires and emotions of the soul, it stimulated voluntary movement.

Sophie Connell warns against assuming that Aristotle forms “the link between the Pre-Socratics and Hellenistic philosophers and physicians,” since the wide range of contexts in which Aristotle employs pneuma evades the kind of systematisation that later emerged. In contrast to philosophers such as Diogenes ot the Hellenistic Stoics, Aristotle did not, Connell argues, understand pneuma as “a mysterious life-giving stuff,” but simply as “another material,” an instrument employed by the soul. Nonetheless, while it is inaccurate to interpret Aristotelian

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76 The four elements of Empedocles are described in Arist., Met. 1.3 984a8–11. For a late-antique account, see Eus., PE 1.8.10.
80 Nussbaum 1978, 143–220 focuses on pneuma as a component of voluntary movement in Aristotle’s thought. See also the more controversial theory of Bos 2003, and the very measured survey of Frampton 2008, 68–81.
81 Connell 2016, 215–20, esp. 216. Cf. Annas 1992, 18: “there is no developed ‘pneuma theory’ in the biological works, and it is easily missed. ... But in a few passages, scattered in the corpus, Aristotle says unmistakably that it is pneuma, not heat, which is required for the soul’s functions of movement, reproduction, and sensation.”
82 Connell 2016, 220. Cf. Annas 1992, 19–20: “It is more plausible to hold that pneuma is just an ordinary physical substance—warm air—and that Aristotle’s more startling claims about it come from the thought that it will acquire new and perhaps surprising properties when functioning in a unified and self-maintaining living being.”
pneuma through the lens of earlier and later thinkers, the concept that Aristotle developed, in all of its polyvalence, was to prove immensely influential in later medicine and philosophy.  

Pneuma appears most prominently in three of Aristotle’s biological works: On the generation of animals, On the movement of animals, and On sleep and sleeplessness. It is in the short treatise On the movement of animals that it plays the most significant and perplexing role—and a role that was to prove critical in later theories of pneuma. This text sets out to explain how animal movement is initiated and fulfilled, that is, “the common cause” of any movement whatsoever. To do so, Aristotle establishes three principles: (1) The initiator of movement must by definition be unmoved. (2) “That which first moves the animal must be within some point of

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83 Cf. Annas 1992, 17: “What is most striking about Hellenistic medical theory, by contrast with Aristotle’s work, is the prominence it gives to the notion of pneuma, which originally means ‘breath’. But the start of the spectacular rise of pneuma to theoretical heights in fact can be found in Aristotle himself.” Fancy 2013, 73–5 discusses Aristotle’s theory of pneuma from the perspective of Arab-Islamic medical science.

84 On the generation of animals (GA 2.2, 735b37–736a1; 2.3, 736b35–737a1; 2.3, 737a79) introduces pneuma as an ingredient in semen, describing it as “hot air” (θερμὸς ἀήρ). In On sleep and sleeplessness (Somn. uirg. 2, 456a11–19), innate pneuma expands and contracts in the abdomen of bloodless (and therefore heartless) animals, such as wasps and bees, thereby explaining the possibility of movement in creatures which do not respire, since movement requires the strength granted by breath. I discuss On the movement of animals further below.

85 I use the translation in Nussbaum 1978 throughout, except where otherwise noted. Nussbaum 1978, 143 identifies the role of pneuma in Aristotle’s account of voluntary movement “one of the thorniest exegetical problems confronting an interpreter of the MA. … one of a series of cryptic pointers towards a fuller account of this pneuma that Aristotle may have planned, or even composed, but which does not survive.” See also Bos 2003, 31–46.

86 Arist., MA 1, 698a1–5: Περὶ δὲ κινήσεως τῆς τῶν ζῴων, ὡς μὲν αὐτῶν περὶ ἐκαστὸν ὑπάρχει γένος, καὶ τίνες διαφορὰι, καὶ τίνες αἰτίαι τῶν καθ’ ἐκαστὸν συμβεβηκότων αὐτῶς, ἐπέσκεψαί περὶ ἅπαντον ἐν ἑτέροις· ἄλος δὲ περὶ τῆς κοινῆς αἰτίας τοῦ κινήσθαι κάνησαι ὑπορεῖον. “The movement of the animals that belong to each genus, and how these are differentiated, and what the reasons are for the accidental characteristics of each—all this we have considered elsewhere. But now we must consider in general the common cause of moving any movement whatever.” Translation adapted.

87 Arist., MA 3, 699a12–4 for the unmoved mover of the heavens; 700a6–11 for the unmoved part in animals.
origin (ἄρχη).”

(3) Animals also have a proximate first mover, a moved mover, which acts as a middle term. The unmoved mover in animals, Aristotle makes clear, is the soul. Its unmoved archē is the heart. The middle term between the ensouled heart and the limbs is desire.

As Aristotle points out, however, “in ensouled bodies there must be some body of this kind,” that is, there must be a bodily middle term which correlates to desire, and which has the strength to move the limbs. This bodily middle term is connate pneuma, from which all animals derive strength. This pneuma resides, like the archē of the soul, within the heart. In reaction to the heart’s condition, its unique physical qualities allow it to expand and contract, to push and pull, so giving rise to bodily movement without itself undergoing alteration. Thus, Bos writes:

Pneuma is also called the organon (‘instrument’) of movement. That is, it is the instrument for the soul-principle by which the soul-principle causes processes to start and end in the bodily parts of the living creature. Pneuma is able to do this because it can contract and expand under the influence of the soul-principle.

88 Arist., MA 8, 701a, 21–2: τὸ δὲ κινοῦν πρῶτον τὸ ζώον ἀνάγκη εἶναι ἐν τινὶ ἄρχη.
89 Arist., MA 6, 700b35–701a1: τὸ μὲν οὖν πρῶτον οὐ κινούμενον κινεῖ, ἢ δ’ ὁρέξις καὶ τὸ ὀρεκτικὸν κινούμενον κινεῖ.
90 Arist., MA 6, 700b9–10: λοιπὸν εστὶ θεωρῆσαι πώς ἢ ψυχὴ κινεῖ τὸ σῶμα. “It remains for us to consider how the soul moves the body.” See also MA 10, 703a28–9 and 36–7 for confirmation that this question has been considered.
91 Arist., MA 10, 703a14–5: ἢ ἄρχη τοῖς μὲν ἐν τῇ καρδίᾳ τοῖς δ᾿ ἐν τῷ ἀνάλογον. “The archē for some is in the heart, and for others is a part analogous to it.”
92 Arist., MA 10, 703a5: ἐστὶν ἢ ὁρέξις τὸ μέσον, ὃ κινεῖ κινούμενον. “Desire is the middle, and being moved imparts movement.”
93 Arist., MA 10, 703a5–6: ἐν δὲ τοῖς ἐμψυχοῖς σώμασι δεῖ τι εἶναι σῶμα τοιοῦτον. See further 703a6–9. Translation adapted. Nussbaum translates τοῖς ἐμψυχοῖς (“ensouled”) as “living.”
94 Arist., MA 10, 703a8–10: πάντα δὲ φαίνεται τὰ ζῷα καὶ ἔχοντα πνεῦμα σύμφωνον καὶ ἰσχύοντα τούτο. For a comprehensive discussion, see Frampton 2008, 68–81.
95 Arist., MA 10, 703a14–6: ἐπει δ’ ἢ ἄρχη τοῖς μὲν ἐν τῇ καρδίᾳ τοῖς δ’ ἐν τῷ ἀνάλογον, διὰ τούτῳ καὶ τὸ πνεῦμα τὸ σύμφωνον ἐνταῦθα φαίνεται ὑπὲρ.
96 Arist., MA 10, 703a18–24: φαίνεται δ’ εὐφυῶς ἔχον πρὸς τὸ κινητικὸν εἶναι καὶ παρέχειν ἰσχύν. τὰ δ’ ἔργα τῆς κινήσεως ὡς καὶ ἐλείς, ὡςτε δεῖ τὸ ὄργανον αὐξάνεισθαι τε δύνασθαι καὶ συστέλλεσθαι. τοιαύτη δ’ ἐστὶν ἢ τοῦ πνεύματος φύσις· καὶ γὰρ ἀμίαστος συστελλομένη, καὶ βιαστικὴ καὶ ὠστικὴ διὰ τὴν αὐτὴν αἰτίαν, καὶ ἔχει καὶ βάρος πρὸς τὰ πυρώδη καὶ κουφότητα πρὸς τὰ ἐναντία.
There is, Aristotle concludes, “no need of soul in each part: it is in some arché of the body, and other parts live because they are naturally attached, and perform their work because of nature.”

Pneuma thus emerges in Aristotle’s account of voluntary motion as a theoretical tool for distributing the soul throughout the body without implying the soul’s corporeal existence. In order to understand how this mechanism for voluntary motion works, Aristotle asks his reader to imagine “puppets” (τὰ αὐτόματα) that are moved by strings (στρέβλαι), to which the “sinews” (νεῦρα) of the body might be compared. Animals, Aristotle explains, move their limbs when their sinews are “loosened” (λυομένων) and “released” (ἀνιμέμένων). This happens particularly in response to images, sensations, and ideas. In order to be loosened, however, the

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98 Arist., MA 703a36–703b2: ὡστε μηδὲν δεῖν ἐν ἀκάστῳ εἶναι ψυχήν, ἀλλ’ ἐν τινὶ ἀρχῇ τοῦ σώματος οὖσῃς τάλα ζῆν μὲν τὸ προσπεφυκέναι, ποιεῖν δὲ τὸ ἔργον τὸ αὐτῶν διὰ τὴν φύσιν.

99 Bos 2003, 34: “we may conclude that pneuma is interpreted in De motu animalium as a natural body that is an instrument for the soul to move the visible body. This pneuma itself is a ‘natural body’, but not the visible body of a plant, animal, or human being. It is the vehicle of the soul-principle, which itself is incorporeal.”

100 Gregoric and Kuhar 2014, 94–7 argue against interpretations of neura as “muscles” in Aristotle’s theory of voluntary movement; ibid., 107–08 provide a detailed interpretation of the puppet metaphor. See also Berryman 2009, 210–15.

101 Arist., MA 7, 701b1–10: ὡσπερ δὲ τὰ αὐτόματα κινεῖται μικρὰς κινήσεως γινομένης, λυομένων τῶν στρεβλῶν καὶ κρουόντων ἀλλήλας τὰς στρέβλας, καὶ τὸ ἀμάξιον, ὡσπερ ὄχούμενον αὐτὸ κινεῖ ιες εὐθυ, καὶ πάλιν κύκλω κινεῖται τὸ ἀνίασους ἔχειν τοὺς τροχοὺς (ὁ γὰρ ἐλάττων ὡσπερ κέντρον γίνεται, καθάπερ ἐν τοῖς κυλίνδροις), ὡστε καὶ τὰ ζώα κινεῖται. ἔχει γὰρ ὀργάνα τοιαῦτα τὴν τε τῶν νεύρων φύσιν καὶ τὴν τῶν ὀστῶν, τὰ μὲν ὡς ἕκει τὰ ζύλα καὶ ὁ σίδηρος, τὰ δὲ νεφρὰ ὡς αἱ στρέβλαι· ὅν λυομένων καὶ ἀνιμέμένων κινοῦται. On the way that neura function to enable voluntary movement in this treatise, see esp. Gregoric and Kuhar 2014, 98–100.

102 Arist., MA 7, 701b13–23. Cf. Pl., Resp. 411a5–b4: Οὐκοῦν ὅταν μὲν τὶς μουσικὴ παρέχῃ καταυλεῖν καὶ καταχεῖν τῆς ψυχῆς διὰ τῶν ὡστοι ὡσπερ διὰ χώνης ὡς νυνὴ ἡμεῖς ἐλέγομεν τὰς γλυκείας τε καὶ μαλακάς καὶ θρησκείᾳς ἀρμονίας, καὶ μυρίζον τε καὶ γεγανομένον ὑπὸ τῆς ὀδοὺς διατελῆ τὸν βίον ὅλον, ὡστε τὸ μὲν πρῶτον, εἰ τι θυμοειδές εἶχεν, ὡσπερ σίδηρον ἐμάλαξεν καὶ χρῆσιμον ἐξ ἀχρήστου καὶ σκληροῦ ἐποίησεν· ὅταν δ’ ἐπέχων μὴ ἀνυὴ ἀλλὰ κηλῆ, τὸ δὴ μετὰ τούτῳ ἴδῃ τίχει καὶ λείβει, ἣς ὃς ἐν ἐκτήξῃ τὸν θυμὸν καὶ ἐκτέμῃ ὡσπερ νεφρά ἐκ τῆς ψυχῆς καὶ ποιήσῃ “μαλακόν ἀίχμην.”
sinews and strings first needed to be taut. Somehow the transformation of the connate \textit{pneuma} adjusts the tensions of the puppet strings that extend outward from the heart to the limbs.

In his important work on the Greek “discovery” of the nervous system, Friedrich Solmsen writes that “[i]t did not occur to Aristotle to specify channels in which the \textit{πνε\u03b9μα} might flow to the limbs (or to the sense organs); yet this question was soon to present itself again, was to dominate the discussion of the medical researchers, and was to find its way also into the philosophical speculations.” One medical author who sought to build most directly upon Aristotle’s model was Praxagoras of Cos (born c. 340 BCE). While little of Praxagoras’s work has survived, his development of the Aristotelian account of voluntary motion is critical for understanding later milestones in the study of how \textit{pneuma} works in relation to the brain.

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103 The concept of tension (\textit{τόνος}) was critical to ancient understandings of voluntary movement. Vegetti 1993 offers a cogent analysis of the “metaphor” of \textit{tonos} as a quality of both the nerves and the soul—that is, as a physiological feature that enables the muscles to respond to the impulses sent out by the brain, and as a characteristic of the \textit{psuchē} that provides the conditions for the appropriate impulses to be sent. See further my discussion in chapter three.

104 Frampton 2008 presents two possible mechanisms. (1) ibid., 78: “The most likely interpretation of Aristotle’s own view on the subject of motor transmission is that the pneuma from its central position in the heart is indirectly involved in the peripheral activity of the limbs through the changes it induces in the sinews (\textit{νε\u03b8ρα}) whose \textit{ἀρχη} is also in the heart. In a ripple-like effect, the sinew propagate to the limbs the ‘waves’ of movement emanating from the pneuma that abides within the chamber of the heart.” (2) ibid., 79: “The alternative hypothesis that sensorimotor transmission occurs along a continuum of pneuma that flows between the heart and the periphery within specific pathways, namely, the blood-vessels.” Frampton notes that this latter hypothesis was proposed both by Diocles and by Praxagoras, the latter of whom we shall discuss further below.

105 Solmsen 1961, 177–78. See also Frampton 2008, 50: “The crux of the problem that plagued Aristotle’s cardiosarcosinew model of sensorimotor function—and the problem that for centuries would continue to plague most other counterproposals—was the difficulty of finding empirically well-delineated anatomical channels that could plausibly shuttle sensorimotor impulses between a centralized controlling source-organ and multiple peripheral sensory and motor end-organs.” See also Gregoric and Kuhar 2014, 110–11.

106 Fragments and introduction in Steckerl 1958. For a brief account of Praxagoras as a contributor to knowledge of the vascular system, see Annas 1992, 21–2; Boylan 2007, 215–16.
Praxagoras built upon Aristotle’s theory of connate *pneuma* by suggesting that while this *pneuma* is distinct from the outside air, it is nourished through respiration.\(^{107}\) He also distinguished between arteries (ἀρτηρίαι), as carrying only *pneuma*, and veins (φλέβες), which he identified as conduits for blood alone.\(^{108}\) This distinction, far from being purely an anatomical nicety, was the foundation for his understanding of how the *pneuma* that resided within the heart brought about the contraction and relaxation of the *neura* that connected and moved the limbs. While Aristotle introduced *pneuma* as a middle term between the soul and the body, the heart and the limbs, Praxagoras articulated anatomical pathways that the *pneuma* might follow.\(^{109}\) His solution was this: The hollow, *pneuma*-filled arteries which are rooted in the heart narrow slowly into *neura* as they reach the limbs, such that the contractions and expansions of the *pneuma* have the power to move the *neura* without requiring that these sinews and tendons be filled with *pneuma* also.

Our source for this view is, unfortunately, a polemical passage in Galen’s treatise *On the opinions of Hippocrates and Plato*, in which Galen seeks to assert his own view that *neura* originate not in the heart but in the brain:

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\(^{107}\) Steckerl 1958, 19: From the whole account, it is obvious that Praxagoras could not have held the pneuma to be partially innate as did Aristotle … Heat is acquired; consequently, the pneuma is acquired, also. Thus it seems that Praxagoras thought the vital pneuma to be entire derived from the air surrounding us. … [But t]he Praxagorean theory of breathing proved that the pneuma cannot have its only source in the air outside the body. Galen expressively [sic] stated that breathing, according to Praxagoras, is only a nourishing of the soul, that breathing gives nourishment for the psychic pneuma (*Pr*. frg. 32). … according to Praxagoras, breathing is a kind of food for the pneuma. … There must be an innate pneuma before a person breathes. This innate pneuma would be supplemented by air from the outside, which gets ἀτμοῦδες in entering the body.” On the notion that *pneuma* is the same as breath, see Solmsen 1961, 179fn2. On Praxagoras’s physiology of respiration, see also Harris 1973, 108–14.


\(^{109}\) Solmsen 1961, 177.
That man [sc. Praxagoras] did not see any neuron originating in the heart, but he liked to argue against Hippocrates and wished to exclude completely the brain as the origin of the neura. Thus he got very bold in putting forward this lie that the arteries, dividing up in their course, become narrow and turn into neura. The arteries had thus a neuron-like, though hollow form. Through the process of their being repeatedly split in the animal, the lumen becomes so small that the walls fall together. When this first happens, the vessel appears already a neuron.\footnote{Praxag. fr. 11 Steckerl = Gal., PHP 1.6.18: οὗτος γὰρ ὁ ἅρη ἐπειδὴ μηδὲν ἠώρα νεῦρον ἐκφυόμενον τῆς καρδίας, ἐφιλοτείμετο δὲ πρὸς Ἱπποκράτην καὶ πάντως ἑβούλετο τὸν ἐγκέφαλον ὄφελέσθαι τῆς τῶν νεῦρων ἀρχῆς, οὐ σμικρὸν ἀπετόλμησε ψεύσασθαι τὰς ἀρτηρίας φάμενος ἐν τῷ προϊέναι καὶ κατασχίζεσθαι στενὰς γιγνομένας εἰς νεῦρα μεταβάλλειν· τοῦ γὰρ δὴ σώματος αὐτῶν ὑπάρχοντος νευρώδους μὲν ἄλλα κοίλου, καὶ τὴν ἐπὶ πλέον ἐν τῷ ἐκ βούλετο ἐσώματει· στενὰς γιγνομένας μικρὸν τὸν κοιλοτήτως ἐς ἐπίπτειν ἀλλήλως τῶν χιτώνως, ὅπωστε τοῦτο πρῶτον γένηται, νεῦρον ἢδη φαίνεσθαι τὸ ἁμέριον. Trans. de Lacy 1978.}

Steckerl writes of this passage that “[t]he whole theory that the air-filled arteries turn into nerves apparently is the result of the opinion that the nerves (the tendons) as the movers of the bones must be connected anatomically with the apparatus of the pneuma, the initiator of the movement.”\footnote{Steckerl 1958, 18. See fn105, above, for the Aristotelian problem that Steckerl responds to here. Do the arteries become sinews, or only resemble sinews? Longrigg 1988, 463 assumes that Praxagoras’s use of the word neuron meant “that it [sc. the attenuated artery] resembled a sinew” (that is, that it did not in face become sinew). He does not, however, explain why he considers Galen’s emphasis on appearance in his closing remark (“the vessel appears already a neuron”) to be more reliable than his suggestion of transformation in his opening summary (“the arteries, dividing up in their course, become narrow and turn into neura”). Whether the arteries turn into or merely resemble the sinews is unclear from Galen’s account. Solmsen 1961, 180 writes as follows: “All he [sc. Praxagoras] may have meant is that in this final phase the appearance of such arteries resembles that of the sinews (for which the word νεῦρον had long been in use). However Galen gives us to understand that by the operation of these νεῦρα Praxagoras accounted for the movement of the fingers and of other parts of the hands.” If Galen is accurately representing Praxagoras’s explanation, then either the arteries do become sinews, or the sinew-like arteries perform the work of sinews, in which case there is not much difference.}

In this respect, Praxagoras demonstrated his entrenchment in the long tradition of considering poroi as central to bodily function. Analogous to blood, pneuma needed specific channels in order to travel through the body and effect voluntary motion and sensation.\footnote{Solmsen 1961, 180. Annas 1992, 22: “The heart pumps out blood through the veins to nourish the body, and pneuma through the arteries to make it sensitive and reactive. We have what is
Praxagoras’s contribution was to connect the pneumatic ducts (πόροι; φλέβες) of earlier tradition with the sinews and tendons (neura) that were considered crucial to the mechanism of voluntary motion. This connection was to significantly impact later medical thought, paving the way for the invention of the “nerves.” Indeed, throughout most of his translation, Steckerl renders Galen’s neuron, as in his commentary, as “nerve.” His ambiguity in the phrase above, “the nerves (the tendons),” is telling. “Nerves” were a conceptual development of the third century BCE. For Praxagoras, neura were still tendons, ligaments, or sinews joining the parts of the body together. As such, they were critical to the mechanics of movement, but did not carry sensorimotor faculties, impulses, or information around the body, as later authors were to argue.

Praxagoras was influential in two respects: First, the influence of pneuma upon neura became a constant in future models of the brain-centred nervous system, which adopted psychic pneuma as the activator, agent, or vehicle of cognitive and sensorimotor functions. Second, the connection of neura to the arteries rooted in the heart provoked investigation into anatomical channels proceeding from the brain. Once located, these channels—in competition with those described by Praxagoras—were termed the neura, and later became known as the “nerves.”

lacking in Aristotle—a centralized mechanism which explains why the body is a sensitive and reactive whole.”

113 This is perhaps closest to Galen’s own rhetorical strategy. See Hankinson 2006, 234fn7, with regard to Galen’s comments in this passage on Aristotle: “Of course the word Aristotle uses, neuron, did not at his time have the precise sense of ‘nerve’ that it was later to acquire, as a result of the anatomical advances of the Alexandrians; Galen was probably well aware of this, but his failure to point this out here does not affect the substantial point of his argument.” According to Solmsen 1957, 122, the Stoic philosopher Chrysippus (Galen’s central rival) drew upon the teachings of Praxagoras to support his own claim that the nerves were indeed rooted in the heart.

114 Solmsen 1961, 185. See further in part three, below.

115 See Rocca 2003, 34–5 for a brief introduction to Praxagoras as a frame for Galen’s theorisation of the brain.

iii. Phlegm

Before we come to the nerves, however, it is necessary to take a step back and consider another side of the brain in early Greek medicine and biology, that is, its role in the absorption and redistribution of phlegm. As we shall see, medical authors commonly attributed the blockage of *pneuma* not only to non-specific “moisture,” but also, and more frequently, to phlegm.\(^{117}\) This model was rooted not only in the concern with the circulation of air throughout the body which we have seen in so many accounts of the brain as an organ of sensation and intelligence, but also in a longstanding association between the brain and the phlegmatic humour, an association which plays out not only in explanations for mental pathology, but also in broader accounts of cerebral physiology and the fluid economy of the animal body.

a) Phlegm and the Brain in Hippocratic Medical Texts

In order to understand the relationship between phlegm and the brain, it is necessary to sketch out the broad framework of humoral theory.\(^{118}\) Hippocratic authors presented a number of

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\(^{117}\) Cold, wet, and white, phlegm was also associated with winter and its diseases, although, paradoxically, the term *phlegma* had originally been associated with heat and inflammation. Lonie 1981, 277–79. The term φλεγμαίνω (“to cause to swell up; to swell up, become inflamed”) continued to carry this latter meaning.

\(^{118}\) Humoral theory proved an enduring model, lasting through to the eighteenth and even, albeit patchily, into the nineteenth century in European and American medicine. Arikha 2007 offers a very readable survey of humoral theory from Greek antiquity to the modern period. See also Siraisi 2009, 104–06 for the continued importance of humoral theory in medieval and Renaissance medicine. For a concise description of humoral theory and its reception in early modern theories of madness, see Salkeld 1994, 20–3. Orland 2012, 444–47 gives an insightful discussion of the “humoral body” in early modern thought, and its “epistemic consequences.”
variations, linked by the basic notion that the functions and dysfunctions of the animal body were enabled, produced, and circulated through a fluid medium, such as water or blood.¹¹⁹

The humours could be mapped onto the four Empedoclean elements: black bile (earth), yellow bile (fire), phlegm (water), and blood (air).¹²⁰ The four elements/humours were also associated with pairs of “qualities” (hot, cold, wet, dry): black bile and earth were cold and dry; yellow bile and fire were hot and dry; phlegm and water were cold and wet; blood and air were hot and wet.¹²¹ In at least one Hippocratic text, moreover, each of the humours is said to derive from a particular organ within the body: The heart produces blood, the liver generates bile, the spleen produces water, and the head (that is, the brain) gives rise to phlegm.¹²²

According to some Hippocratic authors, the brain produces phlegm through the absorption of moisture generated elsewhere within the body, chiefly through the consumption of “phlegmatic” foods, such as cheese.¹²³ As we see further below, it is necessary for the brain to release this moisture, in order to avoid drowning in its own phlegm. Ideally, the phlegm is released through the orifices of the face.¹²⁴ Sometimes, however, and often due to excess, the brain sends down “fluxes” of phlegm through the passages of the body. This is a major cause of

¹¹⁹ Nutton 2012, 77–85 warns against taking Hipp., Nat. Hom. 4.1–3 as the dominant model during the Hippocratic period. The canonisation of black bile, yellow bile, phlegm, and blood, although drawn from this text, was in fact the consequence of Galen’s attention to this model. See, for example, Gal., Hipp. elem. (I 413–508 K.), esp. the beginning of book 2 (I 492–93 K.), and Temp. (I 509–604 K.).

¹²⁰ Isid., Etym. 4.5.3 suggests that this parallelism was common knowledge in late antiquity.

¹²¹ On the relationship between humours, elements, and qualities, see Gal., Hipp. elem.

¹²² Hipp., Genit., Nat. Puer., Morb. 33.8–10: τῷ μὲν δὴ αἵματι ἡ καρδίῃ πηγὴ ἔστι, τῷ δὲ φλέγματι ἡ κεφαλὴ, τῷ δὲ υδάτι ὁ σπλήν, τῇ δὲ χολῇ τὸ χορίον τὸ ἐπί τῷ ἣπατί. “Now the source of blood is the heart; of phlegm, the head; of water, the spleen; of bile, the receptacle upon the liver.” Trans. Lonie 1981, where this is printed as part of the treatise On diseases 4, separately from On the seed and On the nature of the child, to which it is attached in Littré’s edition.


¹²⁴ Hipp., Gland. 12.1–2.
illness in antiquity. If the phlegm passes into the bladder or bowels, then all might (although not necessarily) be well.\textsuperscript{125} If not, then the accumulation of phlegm throughout the body is liable to cause severe pain, ulcers, fevers, epilepsy, and a range of other disorders:

> When the head is excessively heated, much urine is passed; \textit{for the phlegm inside it melts}; and, as it melts, some of it travels into the nostrils, some into the mouth, and some through the vessels [φλεβον] which lead to the genitals. When it arrives at the genitals, [the patient] urinates and suffers as if from strangury.\textsuperscript{126}

According to others, the brain does not so much function as a source of phlegm, as absorb the phlegm that circulates within the rest of the body. Nonetheless, the phlegm still descends to cause troubles, and once again does so on account of a change in temperature:

> The tonsils, the space beneath the tongue, the gums, the tongue, and however many such things there are that have grown there—all these things become diseased on account of phlegm. The phlegm descends from the head; meanwhile, the head draws phlegm up from the body. It draws [phlegm] when it is heated through; and it is heated through by food, by drink, by sun, by cold, by hard work, and by fire. Whenever it is heated through, it draws to itself [phlegm] from the body—and the [phlegm], once it has been drawn up, descends again into the body, whenever the head becomes full and happens to be warmed through by one of these things.\textsuperscript{127}

Temperature was critical to theories of pathology involving phlegm. According to the author of \textit{Airs, waters, places}, people in cities exposed to hot summer winds have heads which are moist and phlegmatic, and often have bowel complaints because phlegm runs down from the head … And when they surpass the age of fifty, fluxes from

\textsuperscript{125}Hipp., \textit{Genit.}, \textit{Nat.Puer.}, \textit{Morb.} 4.18–9 and 27–8.

\textsuperscript{126}Hipp., \textit{Morb.} 2, 1.1–6: Οὐρέται πολλὸν ὅταν ὑπερθερμανθή ἢ κεφαλῆ· τῇκεται γὰρ ἐν αὐτῇ τὸ φλέγμα· τηκόμενον δὲ χωρεῖ τὸ μὲν ἐς τὰς ρίνας, τὸ δὲ ἐς τὸ στόμα, τὸ δὲ διὰ τὸν φλεβῶν αἱ ἄγουσιν ἐς τὸ αἰδίον· ὅταν δὲ ἐς τὸ αἰδίον ἀφίκηται, οὐρέται καὶ πάσχει οὔπερ ὑπὸ στραγγουρίας.

\textsuperscript{127}Hipp., \textit{Morb.} 2, 11: ἀντιάδες δὲ καὶ ὑπογλωσσίδες καὶ οὖλα καὶ γλώσσα καὶ ὁσα τοιαῦτα ταύτῃ περικότα, ταῦτα πάντα νοσεῖ ὑπὸ φλέγματος· τὸ δὲ φλέγμα ἀπὸ τῆς κεφαλῆς καταβαίνει· ἢ καὶ κεφαλῆ· ἐκ τοῦ σώματος ἐλκεῖ· ἐλκεὶ δὲ ὅταν διαθερμανθή· διαθερμαίνεται δὲ ὑπὸ στίχων καὶ ὑπὸ ποσίων καὶ ἄλλον καὶ ψύχος καὶ πόνου καὶ πυρὸς· ὅταν δὲ διαθερμανθή, ἐλκεὶ ἐκ έωσίσει ἐκ τοῦ σώματος· ὅταν δὲ εἰρύση, καταβαίνει καὶ πάλιν ἐς τὸ σῶμα, ὅταν πλήρης γένηται ἡ κεφαλῆ καὶ τῦχη ὑπὸ τίνος τούτων διαθερμανθείσα.
the brain follow upon this paralyse people whose their heads are suddenly sunburnt or frozen.\textsuperscript{128}

The author of \textit{On the sacred disease} explains this connection between temperature change and fluxes from the brain:

For [phlegm] melts away through the heat and liquefaction of the brain; it is separated out through both chilling and consolidation, and in this way it flows down.\textsuperscript{129}

The process was simple but powerful: Following the consumption of certain foods, phlegm accumulates together with other matter in the brain. Heat softens the phlegm and melts it, while the other matter coagulates. Phlegm then escapes from the brain into the blood vessels.\textsuperscript{130}

The most comprehensive description of the brain as a phlegmatic organ is the short Hippocratic text \textit{On glands} (late 5\textsuperscript{th} century BCE). Written perhaps as a manual for medical students, \textit{On glands} systematically describes all the glands in the human body, among which it includes the brain.\textsuperscript{131}

\textsuperscript{128} Hippias, \textit{Aër}. 3.8–10 and 24–7: τὰς κεφαλὰς υγρὰς ἔχειν καὶ φλεγματώδεας, τὰς τε κοιλίας αὐτῶν πυκνὰ ἐκταράσσεσθαι, ἀπὸ τῆς κεφαλῆς τοῦ φλέγματος ἐπικαταρρέοντος … Καὶ ὅκοταν τὰ πεντήκοντα ἐτέα ὑπερβάλλοσί, κατάρροις ἐπιγενόμενοι ἐκ τοῦ ἐγκεφάλου παραπληκτικοῦς ποιέουσι τοὺς ἄνθρώποις, ὅκοταν ἐξαιρήσεις ἥλιωθέωσι τὴν κεφαλὴν, ἢ ὑγιόσωσιν.

\textsuperscript{129} Hippias, \textit{Morb. sacr.} 10.6–7: Ἀποτήκεται μὲν γὰρ ἐκ τῆς θέρμης καὶ διαχύσιος τοῦ ἐγκεφάλου, ἀποκρίνεται δὲ ἀπὸ τῆς ψυξίας τε καὶ ξυστάσιος, καὶ οὕτως ἐπικαταρρέει. On this passage, see Jouanna 2009, 197.

\textsuperscript{130} Aristotle uses this theory to explain sleep (Wolochak 1996, 406–07); see also BeDuhn 1992, 117–19, for the salience of this theory in Manichaean ascetic discourse in late antiquity. On later reception of this theory, see Craik 2012, 72: “This theory was the subject of many Renaissance works, commonly entitled ‘on downward flux’ or ‘on downward fluxes’ \textit{De catarrho} or \textit{De catarrhis}. In a lively ongoing debate, belief in flux from the head, with a corollary belief in the value of head-purgation, was upheld by some, primarily on the basis of ancient authority, and contested by others, primarily on the basis of anatomical impossibility.” See also Wallis 2000, 275 for a striking instance of flux theory entering into a medieval or early modern commentary on the Hippocratic text \textit{Aphorisms}.

\textsuperscript{131} Hippias, \textit{Gland}. Craik 2009 provides an introduction, text, commentary, and translation. Little else has been written about this work. I use Craik’s translation unless otherwise noted.
As to the head, this too has [matter] like glands, the brain. For the brain is both white and loose textured, just as glands [are] also, and accords the same benefits to the head as glands do [elsewhere]. When, in accordance with my account, it is present, the brain giving relief removes the moisture and sends the excess from the fluxes away out to distant parts.\(^{132}\)

It is not clear at this point whether the brain is, or is only similar to, a gland. What is clear is that the fluxes streaming from the brain are a consequence of its glandular function, “giving relief” to the body by absorbing and redistributing or discharging excess moisture. Flux, at least here, is not merely a cause or symptom of disease, but rather appears as the negative side of an essential regulatory function performed by the brain—the balancing of the fluids and humours that circulate within the body.\(^{133}\)

That the brain plays this positive role is deduced in part from the fact that it looks and feels like a gland. Earlier in the treatise, the author has provided further information in this regard:

Their character is spongy (σπογγώδης); they are fine and fatty; they are neither fleshy parts like the rest of the body, nor anything else similar to the body; but they are loose-textured and have numerous vessels. If you were to cut through it, profuse haemorrhage.\(^{134}\) In appearance, white and like phlegm; to touch, like wool. And if you work it with the fingers using lots of force, the gland discharges an oily moistness and that for the most part broken up and dissipated.\(^{135}\)

132 Hipp., Gland. 10.9–13: ἡ κεφαλή· καὶ αὐτὴ ταῖς ἁδέσιν ἔχει ἵκελα, τὸν δὲ ἑγκέφαλον· ἑγκέφαλος γάρ καὶ λευκός καὶ ψαφαρός, ὅκως περ καὶ ἁδένες, καὶ ταύτα ἁγαθὰ τῇς ἁδέσι ποιεῖ τὴν κεφαλὴν· ἐοῦσαν διὰ τὰ εἰρημένα μοι τιμωρέων ὁ ἑγκέφαλος ἀποστερεῖ τὴν υγρασίην, καὶ ἐπὶ τὰς ἐσχατίας ἔξω ἀποστέλλει τὸ πλέον ἀπὸ τὸν ῥοῦν.

133 On glands often talks of excess “moisture,” rather than of excess phlegm in particular. Gland. 14.6, however, confirms that phlegm is the central problem: ἢν δὲ ὀπίσω τὸ ῥεῦμα ἢ <καὶ ἢ> δι’ ὑπερήφανος τὸ ἀφυκόμενον φλέγμα ἐς τὴν κοιλίην. On the importance of humoral balance across various medical traditions, see Horden and Hsu 2013.

134 This contrasts sharply with Aristotle’s opinion that the brain is one of the “bloodless” parts of the body (Arist., PA 2.7, 652a34–652b1).

135 Hipp., Gland. 1.1–7: περὶ δὲ ἁδένον οὐλομελίης ὅδε ἔχει. φύσις μὲν αὐτῆς σπογγώδες, ἀραιαὶ μὲν καὶ πίονες, καὶ ἔστιν οὕτω σαρκία ἵκελα τῷ ἄλλῳ σώματι, οὕτε ἄλλο τι ὁμοίων τῷ σώματι, ἄλλα ψαφαρά καὶ φλέβας ἔχει συχνάς· εἰ δὲ διατάμως, αἰμορραγή λάβρος· τὸ εἶδος
A gland is known by its texture, as tested by manual exercises. Its texture also explains its defining feature—its absorptive properties. As comparisons such as “spongy” and “like wool” suggest, the gland is considered to be well qualified to absorb fluids from the rest of the body.

Absorption was, furthermore, part of a symbiotic relationship between the body and the glandular system. “Glands are present in the body,” the author explains, “in greater number or greater size in its cavities and in its joints, and wherever in other [parts] [there is] moisture, and in the regions of places which are full of blood.” Drawing fluid from their environs, “glands thus make capital of excess in the rest of the body, and this is their natural nourishment.”

δε λευκαὶ καὶ οἰον φλέγμα, ἐπαφομένῳ δὲ οἰον εἰρια· κὴν ἐργάσῃ τοῖς δακτύλοις ἐπὶ πολλὸν βημάτωνος, ἢ ἀδήν ύγρὸν ἀφίσην ἐλαὶωδες, καὶ αὐτὸ θρύπτεται πολλὰ καὶ ἐξαπόλλυται.  

ScARBOROUGH 2010 discusses the importance of practice in late antique surgical education. On manual exercises as a kind of epistemological formation—that is, training to experience the body within a certain framework of knowledge—see the anthropological account of surgical education in Prentice 2013. See also the classic work of Mauss 1935 [1934].

Technological analogies were a common means of elucidating unseen parts of the human body. See especially Webster 2014, which focuses on more complex technologies than sponge and wool, but which provides a clarifying discussion of how such metaphors structured on-going investigations into human anatomy and physiology. Technological metaphors are of concern to scholars working on contemporary understandings of the body and its relationship to the mind also: Kugelmann 1992, for example, suggests that the concept of “stress” is a product of the metaphor “body as machine”; Borck 2012 concludes that the instability of technological metaphors for the brain in neuroscience reflects the complexity invested in the brain as the organ which promises answers to the “mysteries of human nature.” The sponge may be far simpler than the computer or even the clepsydra, but nonetheless it played a formative role in the development of brain anatomy and function in later centuries.

HIPP., Gland. 3.1–3: ἀδένες δὲ ὑπείσιν ἐν τῷ σῶματι πλείους ἢ μέζους ἐν τοῖς κοίλοις αὐτοῦ καὶ ἐν τοῖς ἀρθροίς, καὶ ὅπου ἐν τοῖς ἄλλοις ύγρηδῶν, καὶ κατὰ τὰ αἰματώδεα χορία.

HIPP., Gland. 4.9–10: καὶ οὕτω τῆς πλεονεξίης τοῦ ἄλλου σῶματος αἱ ἀδένες κέρδος ποιεῖμεν τροφῆ σύντροφος αὐτῆσιν ἔστιν. Translation adapted.
Because glands feed upon bodily moisture, “there is no abundance of fluids in the body”—and what excess moisture there is, the glands quickly absorb.  

“The brain is bigger than the other glands.” As such, it provides significant relief, absorbing excess moisture, releasing it through the orifices of the face, and drawing upon it to feed the growth of hair. At the same time, it is the source of many illnesses. According to the author of On glands, these illnesses are “both lesser and greater than those caused by other glands.” The author of On diseases, meanwhile, writes that “in such kinds of disease, the head in particular produces this flux, insofar as it is hollow and situated above.” In contrast to this account, On glands mitigates the role of the brain in causing disease, on the one hand by situating flux within the context of a necessary function (the balancing of bodily moisture), and, on the other hand, by emphasising that the troubles caused by flux from the brain are but one iteration, neither greater nor lesser, of a side effect produced by every gland within the body.

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140 Hipp., Gland. 3.6–7: οὗτος πλάδος οὐκ ἐν ἑν τῷ σώματι ἐι γὰρ τι καὶ γίνοιτο παραυτίκα, οὐκ ἂν ἐπηγίνοιτο πλάδος ὀπίσω. Translation adapted.


142 Hipp., Gland. 4.11–22 for hair and 11.1.18–20 for flux.

143 Hipp., Gland. 11.16: ποιεῖ δὲ νοῦσοι καὶ ἱσσονας καὶ μέζονας ἢ αἰ ἄλλαι ἀδένας.

144 Hipp., Morb. 1, 15.45–7: ἰατρικά δὲ ἐν τῇ ηττήσει τῶν νούσων τὸ ῥεῦμα τοῦτο ἢ κεφαλὴ παρέχει, ἀτε κοῦλη ἑσύσα καὶ ἄνω ὑπερκειμένη.

145 Sometimes, indeed, internal flux from the brain could cure diseases caused by excessive dryness within the body. See in particular Hipp., Mul. 1, 7.12–5: καὶ ἄμα τε ἔρχονται ἔστιν ὅτε προσβάλλειν πρὸς τὸ ἣπαρ, καὶ ἀπὸ τῆς κεφαλῆς φλέγμα καταρρέει ἐς τὰ ὑποχόνδρια οία πνιγομένης, καὶ ἔστιν ὅτε ἄμα τῇ καταρρύσει τοῦ φλέγματος ἔρχονται ἐς χώρην ἀπὸ τοῦ ἦπλος, καὶ παύεται ἤ πνιξ. “Sometimes, at the same time the womb begins to go toward the liver, phlegm flows down from the head to the abdomen (that is, when the woman is experiencing the suffocation) and sometimes, simultaneously with the flow of phlegm, the womb goes away from the liver to its normal place and the suffocation ceases.” Trans. Hanson 1975. Elsewhere in the same text, however, phlegm can also increase the risk of losing a child (Hipp., Mul. 1, 25.17–24). Note that in later tradition, suffocation of the womb was understood to be caused by vapours rising from the womb into the brain (Caciola 2003, 148–49). This was presumably a combination
Early in the treatise, a further twist is introduced. While the author of *On diseases* focuses upon the effect that cerebral/phlegmatic flux has upon the rest of the body (“When, therefore, the brain has begun to flow, and the rest of the body to melt …”146), the author of *On glands* describes illness caused within the rest of the body as the effect of trouble within the gland itself: “They [sc. glands] do not suffer very much trouble, but when they do suffer they make the rest of the body suffer through their own ailment.”147 The kinds of ailments that glands suffer, as corroborated by the catalogue in *On diseases* 2, are “tumours” (φύµατα) and “glandular swellings” (χοιράδες), which lead to fever across the body.148

Glands are said to “suffer little in turn with the (rest of) the body.”149 Yet, the troubles that they do suffer arise “when they are filled up with moisture from the rest of the body flowing into them … through the vessels which are hollow and extend through the glands in great numbers.”150 Whereas other Hippocratic texts, as we have seen, describe flux as provoked through changes in temperature, *On glands* presents the problem as one of overflow and, more precisely, of misdirection. If the fluxes “depart [from the brain] inside and not out,” they ulcerate the body and “pungent stuff lingers.”151 If the brain “should emit a flux” (that is, into the body) then it “corrodes and ulcerates by its streamings.”152 The function of a gland is to draw moisture

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146 Hipp., *Morb.* 1, 15.51–2: οκόταν οὖν ἄρέζεται ἡ τε κεφαλὴ ῥεῖν, καὶ τὸ ἄλλο σῶμα τήκεσθαι.
147 Hipp., *Gland.* 2.8–9: πονέουσι δὲ οὐ κάρτα, άλλα τὸ ἄλλο σῶμα, ἐπὶν πονέωσι, πονέουσι δὴ ἃτ’ ἰδὴν νοῦσον.
149 Hipp., *Gland.* 2.2: παῦρα δὲ καὶ τὸ σώματι συμπονέουσιν.
150 Hipp., *Gland.* 2.11–4: ἐπὶν ὑγρασίης πληρωθέωσι τῆς ἀπὸ τοῦ ἄλλου σώματος ἐπιρρεοῦσης ἐς αὐτὰς … διὰ τῶν φλεβῶν, αἱ δὲ ἀυτῶν τέτανται πολλαὶ καὶ κούλαι.
into itself from the rest of the body and then to release it, but if too much moisture enters, or if
the excess re-enters the body, then the gland becomes a source of sickness both for itself and for
the body as a whole.

Troubles arise, therefore, not *sui generis* within the brain, but through its interactions
with the rest of the body. Disease occurs when the brain does not release its “natural fluxes”
(ῥόοι ... κατὰ φύσιν) to the orifices in the face, to the throat, to the spine, and to the hips.\(^{153}\) If
flux gathers, then the brain itself might be “stung” and “prone to much disturbance,” such that
“the mind loses reason and the brain suffers spasm and ulcerates the person as a whole. ... the
intellect is disturbed and [the sufferer] survives disordered in thinking and disordered in seeing,
tolerating the nature of the malady with gaping grins and strange visions.”\(^{154}\)

Thinking and its disorders are, here, wholly embodied: The disturbance of the mind is
parallel with, and seems to be caused by the stinging or ulceration of the brain. Yet, while
perception and thought are both dependent upon the health of the brain, no explanation is
provided for how either activity is conducted. Is there a relationship between the brain’s
responsibility for absorbing and discharging bodily fluids and its role in thought and perception?

While it is clear how flux theory interacts with theories of mental pathology (moisture is, as
before, the central culprit, in this instance not only flooding the passageways, but also “stinging”
and ulcerating the brain), it remains unexplained how the relationship between the brain’s role as
gland intersects with its part in the activities of soul.


\(^{154}\) Hipp., *Gland.* 12.11–4 and 16–8: ὁ δὲ ἐγκέφαλος πῆμα ἵσχε καὶ ἀυτὸς σὺχ υγιαίνων· ἄλλ’ εἰ
μὲν δάκνοιτο, τάραξον πολὺν ἵσχε, καὶ ὁ νοῦς ἁφρονεῖ, καὶ ὁ ἐγκέφαλος σπάται καὶ ἄλλοι τὸν
ὁλὸν ἀνθρωπόν ... καὶ ἡ γνώμη ταράσσεται, καὶ περιέσθεν ἄλλοι φρονέων καὶ ἄλλοι ὁρέων·
φέρων τὸ ἦθος τῆς νοοῦσου σεσηρόσι μειδιήμασι καὶ ἄλλοκότοισι φαντάσμασιν.
Some clarity is to be found if we turn to the contemporaneous treatise *On the sacred disease*, which we have already encountered as a proponent of the theory that intelligence is carried and activated by the air. The goal of the treatise, however, is not to provide a theory of human intelligence, but rather to insist upon a naturalistic explanation for the “sacred disease.”

This condition, which is also referred to by Plato in the *Timaeus*, probably included various illnesses causing seizures or hallucinations, but is most commonly translated as “epilepsy.”

Arguing that the sacred disease is no more sacred than any other condition, our Hippocratic author provides an account which leans heavily upon flux theory: Moisture builds up inside the brain, flooding the blood vessels which are connected to it; this blocks the passage of air to the brain itself, such that cognitive, affective, and sensorimotor functions are disrupted.

Contrary to the explanations provided by other Hippocratic authors, the author of this text suggests that the accumulation of phlegm is not (or not primarily) food-derived, but is rather the consequence of inadequate purgation of the brain prior to birth:

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155 The text has thus become a touchstone in discussions of the tension between “rational” or “naturalistic” medicine and supernatural healing practices in the ancient Greek world. See Laskaris 2002, especially chapter two. Pigeaud 1987, 50–1 argues that the author is more concerned with theodicy than with promoting atheism, that is, the disease is not “sacred” because this would assume an unjust god. See also van der Eijk 1990 on theology in the treatise. The most recent in-depth study of this text is Lo Presti 2008. To witness popular reception of this text later in antiquity, see the account of madness excerpted from it in Hipp., [*Ep.*] 19 (W. D. Smith 1990).

156 Temkin 1979 [1945] begins his magisterial study of epilepsy with this text; see also Pigeaud 1987, 48–50, and Laskaris 2002, 1fn1. According to Plato, some illnesses are caused by white phlegm, which is troublesome if “trapped within the body,” but mitigated if it finds an exit route, provoking its most notorious condition—“the sacred disease”—if it mingles with black bile and attaches to “the divine circuits in the head.” See Pl., *Tim.* 85a1–b2: τὸ δὲ λευκὸν φλέγμα διὰ τὸ τῶν πομφολύγων πνεύμα χαλεπὸν ἀπολιφθέν, ἐξε δὲ τοῦ σῶματος ἀναπνοσ varargin ἤπιωτος μὲν, καταποικᾶττε δὲ τὸ σῶμα λεύκας ἄλφος τε καὶ τὰ τούτων συγγενῆ νοσήματα ἀποτίκτων. μετὰ χολῆς δὲ μελανῆς κεραθέν ἐπὶ τὰς περιόδους τὰς ἐν τῇ κεφαλῇ θειοτάτας οὐσιας ἐπισκεδασμένας καὶ συνταράτον αὐτὰς, καθ’ ὑπὸν μὲν ἢν ἢν πραθετέρον, ἐγρηγορόσιν δὲ ἐπιθέμενον δυσαπαλλάκτερον νόσημα δὲ ἑρᾶς ὑπὸν φύσεως ἐνδικώτατα ἑρῶν λέγεται. Jouanna 2013 explores the relationship between *Timaeus* and *On the sacred disease.*
for the brain also, just like the other parts, is cleansed and reaches full development before birth. … so, if cleansing does not happen, but rather [sc. the undesirable matter] congeals within the brain, then a phlegmatic constitution necessarily follows.\textsuperscript{157}

A phlegmatic constitution is hereditary, and is determined by conditions prior to birth. It is not, therefore, something for which an individual can be held responsible, although, so the dietetic treatises would argue, one can moderate one’s levels of phlegm through careful exercise and eating.\textsuperscript{158}

The release of phlegm from the phlegmatic brain is, similarly, provoked by changes in the external environment, this time reminiscent of other Hippocratic theories: Heat softens the brain, while coldness congeals whatever is not phlegm, such that phlegm alone flows out. A change in the direction of the wind is a common trigger for a dangerous shift in temperature, and has the same effect on moisture within the brain as it has on moisture outside of it.\textsuperscript{159} A sudden fright can also induce phlegmatic discharge.\textsuperscript{160}

In such instances, the brain tries to release its moisture as mucus and saliva; sometimes the moisture remains in the head and causes ulcers; at other times it enters the chest and causes heart attacks and asthma.\textsuperscript{161} Should these routes be blocked, however, phlegm enters the blood vessels, where “it overpowers and congeals the blood with cold.”\textsuperscript{162} The consequence is a seizure, characterised by the following symptoms: “[The patient] becomes voiceless and chokes; foam froths at the mouth; the teeth lock together, and the hands spasm; the eyes twist about, they

\textsuperscript{157} Hipp., \textit{Morb. sacr.} 5.3–4 and 11–2: καθαίρεται γὰρ καὶ ἀνθέει, ὠσπερ τάλλα μέρεα, πρὶν γενέσθαι, καὶ ὁ ἐγκέφαλος. … ἤν δὲ κάθαρσις μὴ ἐπιγένηται, ἄλλα χυστραφῇ τῷ ἐγκεφάλῳ, οὕτως ἀνάγκη φλεγματώδεις εἶναι.

\textsuperscript{158} Hipp., \textit{Morb. sacr.} 2.7–11.

\textsuperscript{159} Hipp., \textit{Morb. sacr.} 10.9–12 and 13.1–33.

\textsuperscript{160} Hipp., \textit{Morb. sacr.} 10.12–19.

\textsuperscript{161} Hipp., \textit{Morb. sacr.} 5.12–7.1.

\textsuperscript{162} Hipp., \textit{Morb. sacr.} 7.35–6: κρατεῖς γὰρ τοῦ αἵματος τῷ ψύχει καὶ πήγνυσιν.
are conscious of nothing [οὐδὲν φρονέωσιν], and, in some cases, a stool is passed.”

If the cold material is too copious, then the patient dies; if the warmth and quantity of blood overcomes the phlegm and disperses it, then the patient will survive the attack.

With regard to some symptoms, the relationship between phlegmatic flux and functional impairment is purely mechanical: The patient loses his or her voice because the blockage of the blood vessels through excess phlegm prevents the intake of air. In other cases, as we have already seen, the air is represented as the carrier of mental function:

The air flows into the lungs and blood vessels, entering the bodily cavities and the brain also, and in this way furnishes intelligence (φρόνησιν) and movement to the limbs. So, when the blood vessels are blocked off by phlegm from the air and do not receive it, [the patient] becomes speechless and witless (ἄφρονα).

Flux theory collides here with the identification of air as the source of intelligence, and therefore with the importance of circulation to mental health. The traditional theory of phlegmatic flux from the brain as a source of various bodily diseases becomes appropriate for a theory of disturbance to the subject’s capacity for intelligence, by blocking the path of the air.

Yet it is not only that phlegmatic flux prevents reception of the air within the brain. As we saw in the treatise On glands, abundance of moisture also damages the condition of the brain itself—and with the physical deterioration of the brain comes the onset of madness. Based upon

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163 Hipp., Morb. sacr. 7.2–5: ἄφωνός τε γίνεται καὶ πνίγεται, καὶ ἄφρος ἐκ τοῦ στόματος ἐκρέει, καὶ οἱ ὀδόντες συνηρείκασι, καὶ αἱ χεῖρες συσπάνται, καὶ τὰ ὀμματα διαστρέφονται, καὶ οὐδὲν φρονέωσιν, ἐνίοισι δὲ καὶ ὑποχωρεί ἢ κόπρος κάτω.

164 Hipp., Morb. sacr. 7.3–9.

165 Hipp., Morb. sacr. 7.7–11.

166 In their translation, Chadwick and Man (Lloyd 1978) treat “intelligence” and “the movement of the limbs” as separate. However, this is not necessary in the Greek. As we shall see below, phronēsis is, in moderation, a property of the body as a whole.

167 Hipp., Morb. sacr. 7.16–20: ὁ δὲ ἐς τὸν πλεύσιον τε καὶ τὰς φλέβας ἁὴρ ξυμβάλλεται ἐς τὰς κοιλίας ἑσιῶν καὶ ἐς τὸν ἐγκέφαλον, καὶ οὕτω τὴν φρόνησιν καὶ τὴν κίνησιν τοῖς μέλεσι παρέχει, ὡστε, ἐπειδὴ ἀποκλεισθῶσιν αἱ φλέβες τοῦ ἡρός ὑπὸ τοῦ φλέγματος καὶ μὴ παραδέχονται, ἄφωνον καθιστάσι καὶ ἄφρονα τὸν ἄνθρωπον.
observation of goats, the author of *On the sacred disease* writes that, if there is abundance of moisture within the body, then “the brain is eaten away by phlegm and melts; the part which has melted away becomes water, and it surrounds the outside of the brain and washes around it.”

The immediate effect of such excess is to make the seizures frequent, but also easier to overcome because the fluid which floods the channels is diluted. As we discover further on, however, we become mad because of moisture; for whenever it [sc. the brain] is more moist than is natural, it is necessarily agitated (κινέσθαι), and in its agitation (κινεμένον), neither sight nor hearing are steady (ἀτρεμίζειν)... but for as long as the brain is steady (ἀτρεμήσῃ), the person has intelligence (φρονέει).

Phlegm within the brain can affect *phronēsis* in two ways: It can flood the blood vessels, block the passage of the air, and thereby starve the brain of material to interpret; or it can “agitate” and “melt” away the brain itself, preventing both brain and sensory activities from being “steady,” and thereby impairing the brain’s functionality as interpreter.

The transfer from the agitation of the brain (κινέσθαι) to the agitation (μήτε ...) ἀτρεμίζειν) of perception and thought finds a direct parallel in the passage from *On glands* with which we began, in which accumulation of phlegm “stings” (δάκνετο) the brain, which is

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Hipp., *Morb. sacr.* 11.15–8: διεσθίεται γὰρ ὁ ἐγκέφαλος ὑπὸ τοῦ φλέγματος καὶ τήκεται, τὸ δὲ ἀποτηκόμενον ὅδωρ γίνεται, καὶ περιέχει τὸν ἐγκέφαλον ἐκτὸς καὶ περικλύζει. Lloyd adds at the end: “like the sea around an island.” This language is echoed by the late antique bishop Theodoret of Cyrrhus (393–457 CE), in his *Compendium of the fables of the heretics*, which is quoted as the epigraph to my introduction: Thdt., *Haer. fab. comp.* 5.9 (PG 83, 481.14–9): Εἰ δὲ τῇ μὴν προσπέσοι τὸ νόσημα, σίνεται μὲν τὸν ἐγκέφαλον ἢ τὸν ἀτμόν καὶ τὸν χρυμόν μοχθηρία, ὑπὸ δὲ τούτων περικλύζομενος, οὗ δέχεται τῆς ψυχῆς τὴν ἐνέργειαν, ἀλλ’ ἐοικεν ύποβρυχίον τινι γενομένοις, καὶ ός ἐτινῃ καὶ χέιρας κινούντι καὶ πόδας καὶ τὰ ἄλλα τοῦ σώματος μόρια. “But if sickness should fall upon the cerebral membrane, the corruption of the vapours and humours damages the brain, which, being washing around (περικλύζομενος) on all sides, ceases to be receptive to the activity of the soul, but resembles someone who is underwater, moving hands and feet and other part of their body at random.”

Hipp., *Morb. sacr.* 14.15–20: Καὶ ματνόμεθα μὲν ὑπὸ ψυχρότητος· ὁκόταν γὰρ ψυχρότερος τῆς φύσις ἦ, ἀνάγκη κινέσθαι, κινεμένου δὲ μήτε τὴν ὄψιν ἀτρεμίζειν μήτε τὴν άκοίνη, ἀλλ’ ἄλλοτε ἄλλο ὀρήν καὶ ἀκούειν ... ὁκόσον δ’ ἂν ἀτρεμήσῃ ὁ ἐγκέφαλος χρόνον, τοσθοῦτον καὶ φρονέει ὁ ἀθρωπός.
“greatly disturbed” (τάραχον πολὺν ἱσχει) such that “judgement is disturbed also” (καὶ ἡ γνώμη ταράσσεται). It also echoes Alcmaeon’s explanation of mental disorder: If the brain “becomes disturbed (κινουμένου) or shifts its position, then it stops up the passages through which the senses [act].” On the sacred disease works within a framework that sees the brain as mobile, and potential mobility as the consequence of excess moisture or phlegm. For the brain to function properly as an organ of phronēsis, however, the brain must be disturbed as little as possible, and therefore excess moisture must be purged.

According to On the sacred disease, the brain is not responsible for the accumulation or distribution of phlegm. Its presence within the brain is the consequence of insufficient purgation prior to birth, while the discharge of phlegm is determined by accidents of the external environment (for example, changes in temperature). On glands presents a different story. In this text, the brain is responsible for the moisture which it absorbs; indeed, its role within the body is precisely to absorb and redistribute excess moisture. When it fails to carry out this task effectively, the mind is damaged. Yet, despite the differences between these two accounts, there is one important convergence: The brain is responsible both for maintaining humoral balance, and for producing or enabling consciousness and thought. The manifestation of consciousness depends upon humoral stability, such that the role of the brain as humoral regulator is a necessary component of its role as “messenger to consciousness” or “interpreter of the air.”

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172 Cf. Leder 1990, 56: “the brain is the functional regulator both of vegetative states and conscious volitional processes.”
b) Phlegm and the Brain in Aristotelian Biology

The Hippocratic authors defined a set of illnesses provoked by phlegmatic flux from the brain. This illness category was, in some accounts, embedded within a broader understanding of the brain’s role in monitoring and redistributing bodily fluids. The centrality of the brain to maintaining the balance of moisture within the body was by no means confined to these early medical texts. Indeed, it was central to the vision of the brain mapped out by Aristotle in his lesser-known biological works.

In his short treatise *On sleep and sleeplessness*, Aristotle explains that sleep is caused by the cooling-down of the blood. This follows particularly upon eating. Aristotle then raises the question of how digestion, being a form of coction, can possibly cool down the blood. His answer draws upon flux theory, but embeds it within his expert meteorological knowledge:

Of all the parts in the body, the coldest is the brain (or the analogous part in animals which do not have one). Therefore, just as moisture, being evaporated in the heat of the sun, once it comes to the region above is chilled by the coldness in that place, and, condensing, is carried downwards, having become water once again—in the same way, the superfluous vapour, through the rising of heat toward the brain, is condensed into phlegm (φλέγµα). On this account, also, fluxes appear to originate from the head; the [matter] which is nutritious and not diseased is carried back down, having been condensed, and cools down the heat.  

Aristotle provides a mechanical explanation (an “efficient cause”) for the cooling that follows coction, by analogy to the cycle of precipitation in the natural world; as we shall see below, he elsewhere offers a teleological explanation (a “final cause”) also, according to which the cooling...

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of bodily heat is none other than the *telos* of the brain. Even more so than in the Hippocratic text *On glands*, the phlegmatic quality of the brain appears here in a positive aspect. Even the claim that “fluxes ... originate from the head” is cast as only an “appear[ance]” (φαίνονται).

The teleological explanation for the phlegmatic quality of the brain is grounded in the fundamental opposition that Aristotle draws between the brain and the heart. The brain is cold, while the heart is the fount of heat necessary for life. The brain is also entirely devoid of blood, while the heart is the sole organ which contains blood but no blood vessels. That the brain is bloodless was a central argument for Aristotle’s more influential claim that the brain cannot be the organ of sensation, since only parts formed from blood can be sensitive. The brain is bloodless and, it follows, insensitive to touch. It cannot, therefore, be the organ of

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174 These two explanations are two of Aristotles “four causes”: efficient (source of change or rest), final (the sake for which something is done), material (the material out of which something is made), and formal (the form or account of what is to be). See Arist., *Phys*. 2.3 and *Met*. 5.2. It is, of course, problematic to simplify Aristotle’s theory in this manner (see Sprague 1968 and Todd 1976).

175 Besides the passage from Arist., *Somn. uig*. quoted above, see also Arist., *PA* 2.7, 652a27–8: ὃ μὲν γὰρ ἐγκέφαλος ψυχρότατον τὸν ἐν τῷ σῶματι μορίων. For the heart, see for example *PA* 2.7 652b26–7: Ὅ μὲν οὖν ἐγκέφαλος εὑκρατον ποιεὶ τὴν ἐν τῇ καρδίᾳ θερμότητα καὶ ζέσιν. Cf. the (perhaps late) Hippocratic text, *Carn*. 4.1–2: ὃ δὲ ἐγκέφαλός ἐστι μητρόπολις τοῦ ψυχροῦ καὶ τοῦ κολλάδεος. But compare also Hipp., *Aph*. 5.18, in which coldness damages the brain and spinal cord.

176 For the brain, see Arist., *PA* 2.7 652a36–652b1: ἐτι δ’ ἀναμοτάτου τῶν ύγρῶν τὸν ἐν τῷ σῶματι πάντων (οὐδ’ ὁποῖον γὰρ αἵματος ἔχει ἐν αὐτῷ) καὶ αὐχμηρότατον. For the heart, see *PA* 3.4 665b35–666a6, especially 666a4–6: ἐν ταύτῃ γὰρ μόνῃ [sc. the heart] τῶν σπλάγχνων καὶ τοῦ σώματος αἷμα ἄνευ φλεβῶν ἐστὶ, τῶν δ’ ἀλλῶν μορίων ἐκαστον ἐν ταῖς φλεβιν ἔχει τὸ αἷμα. Aristotle’s view runs counter to that of the author of *On glands*, who writes in the opening description of a gland, “If you were to cut through it, profuse haemorrhage” Hipp., *Gland*. 1.4: εἰ δὲ διατάμοις, αἰμορραγή λάβρος. Cf., however, Hipp., *Vict*. 2, 49.14–5: τὸν δὲ ἀνάίμων ἐγκέφαλος καὶ μυελός ἑχορότατα. “of the bloodless parts, the strongest are the brain and the spinal cord.” According to Clark 1963, 7, Aristotle must have made this observation through examination of a fish, a reptilian, or a cooked brain.

177 Arist., *PA* 3.4 666a17–8: οὔτε τῶν ἀναίμων οὐθέν αἰσθητικὸν οὔτε τὸ αἷμα.
common perception within the body. The brain is thus without sensation, while the heart is the seat of all perception and feeling.  

As the organ balancing the heart, the brain displays contrapuntal qualities. This parallels its role as the locus of balance within the body—not, this time, the balance of humours or moisture, but rather of the vital heat produced by the heart. As Aristotle observes, the brain’s failure in this regard would lead to “disease, madness, and death.” The brain’s role, therefore, is to be the heart’s partner in supporting the life and health of the body, within a climactic system that is modelled on the external environment and meteorological system. Within this system, the absorption and release of moisture are both part of a cycle necessary to the body’s survival. Harmful fluxes still occur when the brain has taken in “more than a due proportion of coldness,” but the pathological focus of flux theory has been transformed overall into a positive model of balance and precipitation, moderated by the brain.

c) *Pneuma* and Phlegm in Later Medical Texts

According to the post-Hippocratic medical authors Diocles and Praxagoras, phlegm gathers within the arteries that are rooted in the heart, and thereby obstructs the passage of the *pneuma*. This process is pathological, and can impede sensorimotor activities. Their accounts are preserved by the anonymous author commonly known as the *Anonymus Parisinus* (c. 1st century AD).

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178 For the brain, see Arist., *PA* 2.7 652b4–4: μηδεμίαν ποιείν αἰσθήσιν θαγανόμενος. For the heart, see Arist., *PA* 3.4 666a11–4: ἐτὶ δ’ αἱ κινήσεις τῶν ἡδέων καὶ τῶν λυπηρῶν καὶ ὀλος πάσης αἰσθήσεως ἐντεῦθεν [sc. the heart] ἀρχόμεναι φαίνονται καὶ πρὸς ταύτην περαινοῦσαι.

179 On Aristotle’s conception of vital heat, see Solmsen 1957; Freudenthal 1995; Studtmann 2004.

180 Arist., *PA* 2.7, 653b4–5: ὅστε νόσους καὶ παρανοίας ποιεῖν καὶ θανάτους.

181 Arist., *PA* 2.7, 652b33–6: διὸ καὶ τὰ ῥεύματα τοὺς σώμασιν ἐκ τῆς κεφαλῆς ἐστὶ τὴν ἀρχήν, ὅσοις ἢ τὰ περὶ τὸν ἐγκέφαλον ψυχρότερα τῆς συμμέτρου κράσεως.

182 Clarke 1963, 7 points out that the cooling functions of the brain are attributed to the blood vessels surrounding it, rather than to the brain itself.
CE), who aligns them with the Hippocratic theory of flux, which is, as we have seen, rooted in the brain. Through the juxtaposition of these various aetiologies, illnesses involving sensorimotor impediment come to be attributed by “Hippocrates” to the brain. Consider, for example, the explanations provided for apoplexy:

The cause of apoplexy: Praxagoras and Diocles say that the condition comes about around the thick artery [sc. the aorta] because of phlegm that is cold and dense, so that no pneuma at all can be blown along it; thus, there is a risk of total suffocation. Hippocrates and Erasistratus, meanwhile, say that a substance of cold and icy phlegm is condensed around the brain, and that because of this the nerves (νεῦρα) that grow out of it from it are filled up and do not receive the psychic pneuma in addition, but instead this [pneuma] is suffocated and in danger of being quenched.\(^{183}\)

Similar explanations can be adduced for epilepsy, paralysis, paralysis of the sense of smell, and lethargy.\(^{184}\) The references to pneuma and neura are clearly anachronistic.\(^{185}\) What the Anonymus Parasinus reveals, however, is that flux theory continued to be important long after the transition from classical (Hippocratic) to Hellenistic and even imperial-period medical theory. Moreover, and more to the point, we observe in the examples gathered by the Anonymus Parisinus that flux theory was to remain integral to the new understanding of the nervous system.

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\(^{183}\) Anon. Paris., *Acut.* 4 = Diocl. fr. 95 van der Eijk = Praxag. fr. 74 Steckerl, part: Ἀποσπληξίας αἰτία. Πραξαγόρας καὶ Διοκλῆς περὶ τὴν παχεῖαν ἄρτηριαν γίνεσθαι φασὶ τὸ πάθος ὑπὸ φλέγματος ψυχροῦ καὶ παχός ὡς μηδ’ ἐν αὐτῇ οὐχ ὅτι πνεῦμα παραπνεύσθαι δύνασθαι· καὶ οὕτω κινδυνεύειν τὸ πᾶν ἐγκαταπνιγῆναι. Ἡποκράτης δὲ καὶ Ἐρασίστρατος φασὶ περὶ τὸν ἐγκέφαλον φλέγματος ψυχροῦ καὶ παγετώδους γίνεσθαι σύστασιν, ὡς’ οὕτω καὶ τὰ ἀπὸ τοῦτο περικότα νεῦρα πληροῦμενα μὴ παραδέχεσθαι τὸ ψυχικὸν πνεῦμα, ἀλλ’ ἐγκαταπνιγόμενον τοῦτο κινδυνεύειν ἀποσβεσθῆναι.


\(^{185}\) Van der Eijk 2000, II, 169.
and sensorimotor disorders that emerged in the third and second centuries BCE. It is to the “discovery” (or “invention”) of the nerves that we next turn.

Conclusion

This section has examined in closer detail three concepts key to understanding the brain in ancient medical discourse: poroi (channels, ducts), pneuma (air, breath), and phlegm. These concepts come together in accounts of psychological function and dysfunction as follows: The circulation of pneuma through the poroi enables intelligence, by carrying sensory impressions to the brain and animating the limbs. When phlegm, a cold and sluggish humour, blocks the poroi, intelligence and sensorimotor function are disrupted. At the same time, however, as we saw in both Hippocratic and Aristotelian texts, phlegm was not simply an antagonist or a parasite, conceptually necessary merely to explain disease. Rather, phlegm was a necessary partner in what was to become by late antiquity a humoral quartet, cooling the body through its natural cycle; moreover, the absorption and release of phlegm within the brain was a necessary part of maintaining the balance of the whole. The role of the brain in mediating perception, voluntary motion, and thought was mirrored in, and sometimes supported by, the central part that the brain played in maintaining humoral balance within the body.

The ancient brain was embedded within an inner landscape, for whose balance it was responsible, and by whose imbalance it was affected. The sensitivity of the brain to the humoral condition of the body was to remain important in late antique understandings of the organ, although the central problem shifted from the responsibility of the brain for absorbing and circulating phlegm, to the responsibility of the individual for adopting practices of self-care that
would avoid detriment to the brain. More immediately, however, the poroi and the pneuma of the Hippocratic period were to be transformed, through the flowering of Hellenistic science, into the components of the sensorimotor nervous system.

3. Hellenistic Philosophy and Medical Science (3rd–2nd Centuries BCE)

Part three examines two Hellenistic developments in brain science, one medical, and the other philosophical. The first is the concept of the “nerves” (νεῦρα), first described by Alexandrian medical scientists. The second is the concept of the “governing part” of the soul (ἡγεμονικόν), which is typically ascribed to Stoic philosophers. While the Stoics located the hêgemonikon in the heart, the term was adopted by other doctors and philosophers, and through the works of Galen became indelibly associated with the brain. Drawing deeply upon contemporary medical theory and practice, Stoic philosophers mapped out mechanisms for the operation of the hêgemonikon within the structures of the body that provided Galen with a framework within which to articulate his own, oppositional account.

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186 See chapters three and four.
187 It is generally agreed that the term hêgemonikon was Stoic in origin, although there is some debate about whether or not it was invented or used by the Peripatetic philosopher Strato. See, especially, Annas 1992, 29fn36 and Long and Sedley 1987, II, 313. Gilbert 2014, 8–11, providing a brief discussion of the hêgemonikon as it was to be appropriated in Christian anthropological and theological texts, argues that the concept of the hêgemonikon is Platonist in origin, and that it derives only its name from Stoic philosophy.
188 The earliest Stoics were contemporary with the Hellenistic physicians, and it is unclear how influences circulated between the philosophical and the medical schools. See esp. Rocca 2003, 62fn74, but cf. von Staden 2000, 102–04; Annas 1992, 25: “The Stoics are in debt to contemporary science not just in making soul pneuma but in making its association with the body take the form suggested by the discoveries of the Hellenistic doctors: it is what makes the living body function, by driving a centralised system that is linked to all parts of the body.”
The discoverers of the nervous system were the scientists Herophilus of Chalcedon (c. 335–280 BCE) and his younger contemporary Erasistratus of Ceos (c. 304–250 BCE). According to Galen, Herophilus was the student of Praxagoras. Through meticulous dissection of human bodies, he mapped not only the anatomy of the nerves, but also the inside of the brain. Building upon the work of Herophilus, Erasistratus further developed theories of how these nerves worked to mediate between the brain, now the hub of “psychic” pneuma, and the rest of the body. The neura theorised by Herophilus and Praxagoras were built upon the foundations of the sinews (νεῦρα) poroi, and phlebes. By rerouting the neura through the brain and making

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189 The fragments of Herophilus are in von Staden 1989 (33–66 for fragments, testimonia, and an account of the life of Herophilus), and those of Erasistratus in Garofalo 1988 (see 17–22 for a brief biography). Solmsen 1961, 184–97 and Rocca 2003, 34–42 provide detailed discussions of their research regarding the nerves and the brain, such as we are able to reconstruct it. Harris 1973, 177–233 provides a detailed account of the scientific practices of investigation and the theories about the heart developed by Herophilus and Erasistratus. The heart is relevant to the question of pneuma because it is the site where vital pneuma is produced. In particular, Harris deals with the question of whether Erasistratus continued to believe that pneuma was carried in the arteries, as well as in the nerves.

190 Von Staden 1989, 43, inc. Herophil. t. 9 and t. 11 von Staden. See also Longrigg 1988, 463.

191 Scientists in Hellenistic Alexandria witnessed a fleeting opportunity for Greek scientists to develop programs of systematic human dissection, with authorisation and supply provided by the Ptolemaic kings of Egypt. Heirs to Alexander the Great, the Ptolemies continued in his spirit of expansion through intellectual innovation, sponsoring a library, a literary coterie, and a program of scientific investigation. The brief window of time in which it was possible for scientists to perform anatomical experiments upon human bodies enabled them to articulate internal bodily structure in a far more detailed and empirical fashion than any of their predecessors. See Longrigg 1988; von Staden 1989, 1–31, 139–53; Annas 1992, 23–3; von Staden 1992; Longrigg 1993, 177–219; Flemming 2005. Webster 2014, 69–92 describes anatomical investigations in relationship to technological innovation within Hellenistic Alexandria. For ancient witnesses, see Herophilus t. 63–6 von Staden.

192 “Psychic pneuma” translates ψυχικὸν πνεῦμα, which is rendered in Latin accounts as spiritus animalis. In English-language discussions dependent on medieval and Renaissance or early modern sources, the term is often “animal spirit.” See, for example, Kemp 1990, 25.

193 For a contrasting perspective, see Smith 2010, 11: “[Herophilus] was one of the first, if not the first, to distinguish nerves from blood vessels and tendons.” Cf. von Staden 1989, 250.
them directly susceptible to *pneuma*, Herophilus and Praxagoras invented the conception of the nervous system that was to structure medical understandings of the relationship between brain, body, and soul in late antiquity and thereafter.\textsuperscript{194}

Herophilus and Erasistratus dissected the brain, and identified within it a number of ventricles (Gk. κοιλίαι, Lat. *ventricula*).\textsuperscript{195} According to Herophilus, the soul governed movement and perception from within the fourth and final ventricle, that is, the ventricle contiguous with the spine.\textsuperscript{196} Transferring Aristotle’s *neura* from the heart to the brain, and merging them there with the *poroi*, Herophilus suggested that the special *pneuma* refined within the brain affected the *neura*, which were rooted in the fourth ventricle and in the spinal column, and so enabled both movement and sensation.\textsuperscript{197} His younger contemporary Erasistratus, meanwhile, maintained that sensory nerves, which he considered to be hollow, grew out of the focusing upon the convergence of faculties associated with these different kinds of passage: “the question ‘what agencies or faculties are responsible (a) for voluntary bodily movements and (b) for sense perception?’ had preoccupied numerous philosophers and physicians prior to Herophilus, ... but no one before Herophilus, not even Aristotle—who made a brilliant attempt to explain both activities by the same psychophysiological principles—had discovered that the same organs, i.e. the nervous system, are responsible for both activities.”

\textsuperscript{194} Annas 1992, 24 invokes “theoretical economy” as an explanation for the recycling of the terms *pneuma* and *neura* in the Hellenistic model.

\textsuperscript{195} Von Staden 1989, 158–59; Manzoni 1998, 108; von Staden 2000, 87–91. This early dissection of the cerebral ventricles continues to stir interest among contemporary neurologists (Imai 2011; Pearce 2013).

\textsuperscript{196} Von Staden 1989, 247–48. See also Herophilus t. 137 von Staden, with von Staden 1989, 389–90.

\textsuperscript{197} Solmsen 1961, 185: “Thus it was Herophilus who after so many ingenious theories and speculations actually identified the entities through which the soul partakes in the processes of sense perception and of bodily movement.” Ruf., *Anat.* 74.1–2: κατὰ δὲ τῶν Ἡρόφιλου ἄ μὲν ἐστι προαιρετικά, ἂ καὶ ἔχει τὴν ἐκφύσιν ἀπὸ τοῦ ἐγκεφαλοῦ καὶ νοσταιοῦ μυελοῦ. See the brief discussions in Longrigg 1988, 462–64; Rocca 2003, 37. Manuli and Vegetti 1977, 15 suggest, in fact, that Aristotle redirected the optic nerves from the brain to the heart.
membrane surrounding the brain, while the motor nerves, which he considered to be solid, were rooted in the brain and spinal cord.\textsuperscript{198}

Erasistratus’s distinction between hollow and solid nerves raises a question which remains unresolved: Did Herophilus consider the nerves (apart from the optic poroi) to be hollow conduits through which pneuma flowed in order to act upon the sensory and motor organs?\textsuperscript{199} Or were the nerves solid bodies, extensions of brain matter (marrow), whose substance was qualitatively altered through contact with the pneuma? Indeed, how did Erasistratus think that pneuma worked upon the motor nerves, which he believed were solid? Historians describing the early nervous system in causal terms are inclined to suggest that pneuma enters the nerves, as if they are hollow.\textsuperscript{200} Yet, as we shall see, this is by no means certain.

\textsuperscript{198} Ruf., \textit{Anat.} 73: \kappaατά μὲν οὖν τὸν Ἐρασίστρατον δισσὸν ὄντων τῶν νεύρων αἰσθητικῶν καὶ κινητικῶν, τὸν μὲν αἰσθητικῶν ἀ κεκοίλανται ἀρχάς εὔροις ἄν ἐν μήνιγξι, τὸν δὲ κινητικῶν ἐν ἑγκεφάλῳ καὶ παρεγκεφαλίδι.

\textsuperscript{199} It is uncontested that the nerves leading to the eyes (identified often as poroi, rather than as neuræ), were considered to be hollow and to contain pneuma. See, for example, Solmsen 1961, 186–87; Smith 2010, 11, inc. fn8 (describing the theory of hollow optic nerves as a “misperception”); Boudon-Millot 2012b, 558–59. For direct testimony, see Herophil. t. 85 von Staden = Gal., \textit{De symp. caus.} 1.2 (VII 88.17–89.2 K.): δοκεῖ δὲ μοι τὸ ἀπ’ ἑγκεφάλου καταφερόμενον ἐπὶ τὸν ὁφθαλμὸν νεύρον, ὁ δὴ καὶ πόρον ὀνομάζουσιν οἱ περὶ τὸν Ἡρόφιλον, ὃτι τοῦτο μόνον φανερόν ἐστι τὸ τρήμα, πνεύματος ὑπάρχειν ὀδὸς αἰσθητικοῦ. “The neuron which proceeds down from the brain to the eye—which Herophilus and his followers in fact also call a ‘passage’ (poros), because its perforation alone is clearly visible—seems to me to exist as a pathway for the sensory pneuma.” Trans. von Staden 1989. Von Staden 1989, 237–38, 252–53 argues that Herophilus retained the name poros not only because it was traditional but also because the visible lumen made the optic nerve appear different to other nerves. Solmsen 1961 remarks that it is unclear whether Galen means that, according to Herophilus, only the optic nerves was a pathway for the sensory πνεύμα, or if this pathway alone appeared clearly.

\textsuperscript{200} See, for example, Pagel 1958, 98, with reference to Galen: “it [sc. a ventricle of the brain] prepares the instruments of the soul, namely the animal spirits which flow into the nerves.” For a more recent and more popular example, see Finger 2000, 46: “[Galen] blended Plato’s theory [of the tripartition of organs according to the three faculties of soul] with the pneumatism of Erasistratus, the Alexandrian who had suggested that tiny spirits are able to travel through hollow nerves to and from the brain and its large hollow cavities, the ventricles.”
The question is rooted in the contested definition of the *neura* themselves. On the one hand, the *neura* now performed the sensory function of the *poroi* and the *phlebes*, which had conveyed air through the body in earlier models.\(^{201}\) Like the *poroi*, as we saw above, the *neura* could be “blocked” by phlegm, at least according to the synthesis of later authors.\(^{202}\) On the other hand, the *neura* not only stand in parallel to *poroi* and other such channels, but are also categorised, through their nomenclature and their motor function, with the sinews.\(^{203}\) As Solmsen points out, “Herophilus did not make a clear cut distinction between the motor nerves and the νεῦρα connecting bone with bone or muscle with muscle.”\(^{204}\)

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\(^{201}\) The physiological model of *pneuma* flowing through specific channels is reinforced by the analogy that Erasistratus established between nerves and blood vessels, as conceptualised most clearly in his concept of the *triplokia*. This was the combination of arteries, veins, and nerves that Erasistratus believed formed the basis of the animal body: Erasistr. 86 Garafalo = Gal., *[Int.]* 9.3–4 (XIV 697–8 K.); see Vegetti 1993, 72–3, and also Leith 2015 for a thorough discussion, esp. 254–55 for the important argument that Erasistratus does not, as is sometimes assumed, think that the entire body is composed of these three “elements,” but rather that they are structurally important to all of the functions of the body. Just as blood and vital *pneuma* travel from the heart to the brain via the arteries, so psychic *pneuma* departs from the brain via the (sensory) nerves. As suggested in Leith 2015, 261, each of the vessels (artery, vein, nerve) conveys “their own peculiar fluid substance whether blood, vital pneuma or psychic pneuma, to the parts that require them.” Cf. Smith 2010, 12: “[Erasistratus] conceived that the body was constructed of three tubular elements woven and interbraided down to levels below visibility. These three elements were arteries, veins, and nerves. Each of these vessels contained a fluid. The veins contained blood, a nutritive fluid manufactured by the liver from the products of digestion. The arteries contain a more rarefied fluid, *pneuma zotikon* or vital spirit, derived from the environing pneuma. Finally, the nerves were filled with a yet more rarefied and ‘subtle’ fluid, *pneuma psychikon* or animal spirit, refined from the *pneuma zotikon* in the brain.” The consequence of this, as Heinrich von Staden points out, is that the nerves, as “one of the three constitutive parts of the constitutive element (*triplokia*) of the entire body, ... are present everywhere in the body. Soul, as psychic pneuma, therefore, is likewise corporeally present throughout the body” (von Staden 2000, 93–4).

\(^{202}\) *Anon. Paris.* 4.2 reports that Erasistratus and Hippocrates both think apoplexy is caused when the nerves rooted in the brain are filled up with *pneuma*.

\(^{203}\) Frampton 2008, 117–20 discusses the “post-Aristotelian revisions of nerve terminology,” which he considers “symptomatic of important conceptual shifts.”

\(^{204}\) Solmsen 1961, 185fn2. Cf. von Staden 1989, 250–51, and also Ruf., *Anat.* 74.2–3 = Herophil. t. 81 von Staden, regarding Herophilus’s view of the motor nerves: καὶ ἄ μὲν ἀπὸ ὀστοῦ εἰς...
Solmsen examines the matter in detail, and concludes that “the evidence for Herophilus includes no direct testimony either for or against the presence of πνεῦμα in the motor nerves,” although some indirect evidence may suggest that this was the case.\textsuperscript{205} Von Staden argues that it is more likely that “Herophilus thought of the body of the nerves”—rather than of some ‘faculty’ or medium, such as psychic or kinetic pneuma—as the cause of motion.\textsuperscript{206} Highlighting in particular the “sinewy” connection of the motor nerves, von Staden cautions us against drawing firm conclusions regarding how exactly the psychic pneuma was thought to act upon the nerves.\textsuperscript{207} Nor are the sensory nerves any less obscure. While Herophilus certainly considered the optic nerves to be poroi channelling pneuma into the eyes, and Solmsen suggests that

\begin{quote}
όστον ἐμφύεται, ἀ δὲ ἀπὸ μυὸς εἰς μῦν, ἀ καὶ συνοῖε ἡ ἄρθρα. “Some of which grow from bone to bone, others from muscle to muscle, while others bind the joints also.” Translation adapted from von Staden 1989. See also Rocca 2003, 37–8, on this passage: “According to Rufus of Ephesus, Herophilus held that the motor nerves arise from the brain and the spinal marrow. Herophilus did not completely distinguish between nerves, tendons and ligaments, apparently placing all of them under the umbrella of structures which collectively exercise the same physiological function, and thereby creating, whether deliberately or not, a partial physiological shift between this and the Praxagorean view in which pneuma carried by the arteries alone was the responsible agent for motion.”
\end{quote}

\textsuperscript{205} Solmsen 1961, 187, but see 186–88 for the full discussion.
\textsuperscript{206} Von Staden 1989, 257. See also 247: “Herophilus, says Galen, did not recognize ‘that the body of the nerves is not itself the cause of motion but rather its instrument (organon), whereas its moving cause is the faculty (dynamis) which extends through the nerves. Here I reproach Herophilus for not having distinguished faculty from instrument’. If Galen’s criticism is accepted as valid, Herophilus attributed voluntary motion to the motor nerves, ligaments, tendons, and muscles (all of which presumably were ultimately controlled by the command centre in the hindbrain), but did not introduce an additional faculty or medium such as motor pneuma through which the hindbrain could communicate with them.” Cf. Rocca 2003, 38: “Herophilus seems to have used pneuma as a physiological medium for nervous action, but quite how it was used remains uncertain.”
\textsuperscript{207} Von Staden 1989, 254–57, esp. 256–57: “It therefore seems likely that Herophilus’ explanation of voluntary motions included not only the motor nerves, extending from the cerebellum or fourth ventricle of the brain to various parts of the body, but also tendons, ligaments, and muscles, all of which he viewed as species of ‘the genus of nerve-like parts’. But exactly how does motion actually take place? Did Herophilus conceive of the motor nerves—and perhaps of the tendons, ligaments, and muscles—as ‘pathways for motor pneuma’, just as he apparently conceived of the optic nerves as pathways for sensory pneuma?”
passageways for *pneuma* were theorised in all nerves at least hypothetically, von Staden once again counsels caution, remarking that “the ancient sources’ silence—especially Galen’s—concerning the question whether, in Herophilus’ view, *all* sensory nerves contain sensory pneuma and communicate with the ‘command centre’ in the cerebellum (or fourth ventricle) by means of this pneuma, remains troubling.”

What is this *pneuma* that acts upon or within the nerves? According to Friedrich Solmsen, “πνεῦμα had advanced,” in the period between the investigations of Aristotle (died c. 322) and of Herophilus (born c. 335), “to a central place in physiology”—indeed, it “had become the instrument of soul.” Indeed, it was during this period, through the writings of both the Hellenistic physicians and Stoic philosophers, that *pneuma* came to be differentiated (although not yet systematically) into several different kinds. In particular, three kinds of *pneuma* were

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208 Solmsen 1961, 187: “the πνεῦμα in the other sensory nerves was for Herophilus a λόγῳ θεωρητόν, something whose presence was to be inferred by reason.” Von Staden 1989, 254. Cf. Berryman 2009, 197–98, which provides an excellent account of the indebtedness of medical *pneuma* to contemporaneous technological advances, but which cites von Staden 1989 as the authority for the claim that in Alexandrian medical science, “nerves were thought to contain *pneuma*: central passageways are visible in larger nerves such as the optic nerve, and this was assumed to be true of smaller nerves also.”

209 Solmsen 1961, 185; see also Manuli and Vegetti 1977, 23.

210 Siegel 1968, 184–90, providing a brief history of *pneuma*, largely from the perspective of contemporary biomedicine. See also the foundational work of Verbeke, 1945, 11–174 (Stoic theories of *pneuma*, arranged by individual Philosopher from Zeno of Citium to Marcus Aurelius), and 175–220 (medical theories from Erasistratus to Galen). On the differentiation of *pneuma* during this period, and the challenge of identifying who first articulated which distinction, see von Staden 1989, 253–54, esp. fn52–3; Rocca 2003, 61–4; Rocca 2012, 635–36. The two biggest challenges are that the various terms are not systematised at this period, and that later authors apply terminology retrospectively in giving accounts of their sources. A good example is provided by Calcidius, who, as we saw earlier, identified the *pneuma* that fills the *poroi* of Herophilus’s eyes as “natural *pneuma.*” (Calc., Comm. in Plat. Tim. 246 = A 10 DK = Herophil. t. 86 von Staden. See fn33, above.) It is unclear whether this is the term that Herophilus in fact used, as natural *pneuma* was associated with the functions necessary for all animal life, such as digestion. A more likely term is perhaps “psychic *pneuma*” (responsible for
identified by medical practitioners.\footnote{211} First there was psychic \textit{pneuma}, which was broadly held to be responsible for cognitive and sensorimotor functions.\footnote{212} Erasistratus located psychic \textit{pneuma} in the brain and nerves, in contrast to vital \textit{pneuma}, which he located in the arteries and the heart.\footnote{213} Second, there was natural \textit{pneuma}, which Stoic philosophers and medical authors contrasted to psychic \textit{pneuma} as responsible not for cognitive and sensorimotor functions, but rather for the sustenance of life.\footnote{214} Both the Stoics and the medical author Erasistratus also theorised “vital \textit{pneuma},” which Erasistratus located in the heart and arteries.\footnote{215}

\footnote{211} See Annas 1992, 24–5, for the theoretical flexibility and fruitfulness of \textit{pneuma} in Stoicism. I do not include here the Stoic category of \textit{hektikon pneuma} (SVF II, 716; see Rocca 2003, 62fn72) because it did not prove important in theorisations of the brain and nervous system. \footnote{212} Rocca 2012, 635 defines psychic \textit{pneuma} as “responsible for all nervous action.” \footnote{213} Von Staden, 1989, 254fn53, with reference to Gal., \textit{PHP} 1.6.3: \textit{Ἐρασίστρατος μὲν γὰρ ζωτικὸν πνεῦματος, Χρύσιππος δὲ τοῦ ψυχικοῦ πνεῦματος πλήρη φησι, εἶναι τὴν κοιλίαν ταῦτην. “Erasistratus says that this ventricle [sc. of the heart] is full of vital \textit{pneuma}, Chrysippus of psychic \textit{pneuma}.”} Von Staden also points us toward Gal., \textit{PHP} 2.8.38: \textit{μετὰ κατασκευῆς λόγων οὐκ ὀλίγων ἐκ μὲν τῆς κεφαλῆς φησι τὸ ψυχικόν, ἐκ δὲ τῆς καρδίας τὸ ζωτικὸν ὀρμᾶσθαι πνεῦμα. “[Erasistratus] supports with no few arguments his assertion that psychic (pneuma) starts from the head, and vital pneuma from the heart.”} See also Solmsen 1961, 189–90. Note that Chrysippus was a Stoic philosopher, who held the doctrine that the ruling part of the soul (that is, the part responsible for sensory, motor, and cognitive functions) operates from within the heart. However, see Rocca 2003, 62: “although the term psychic pneuma was used by the Stoics, and changes in its tensional state were said to account for individual action, pneuma was not linked to any specific \textit{part} of the body.” \footnote{214} Rocca 2003, 63: “According to the author of the Pseudo-Galenic \textit{Introductio siue Medicus}, it would seem that by the Hellenistic period a distinction was being drawn between \textit{natural pneuma} (responsible for all life functions) and \textit{psychic pneuma} (responsible for all nervous activities).” Cf. Gal., \textit{[Int.]} 9 (XIV 697 K.) = SVF II, 716. See Rocca 2003fn77 for other references. As we shall see in the next sub-section, Stoic authors identified natural \textit{pneuma} as active in all living beings from plants upward (Long 1999, 563). Von Staden 2000, 91–6 offers a helpful consideration of the difference between natural and psychic activities of the soul, and their relationship to \textit{pneuma}, in the writings of Erasistratus. \footnote{215} Harris 1973, 200; von Staden 1989, fn53; Annas 1992, 23–5.
Erasistratus argued that the vital *pneuma* distributed by the heart becomes psychic *pneuma* upon entering the brain.\(^{216}\) The medical author Galen, writing in the second century CE, described this process as follows in his treatise *On the opinions of Hippocrates and Plato*:

And you would expect even more that this [psychic] *pneuma* is produced when the vessels, especially the arteries, breathe it out into the ventricles of the brain ... . Just as vital *pneuma* is generated in the arteries and the heart, getting the material for its generation from inhalation and from the vaporization of the humors, so the psychic *pneuma* is generated by a further refinement of the vital.\(^{217}\)

The source and function of natural *pneuma* was less clearly theorised by the medical authors, and Galen referred to it only ambiguously.\(^{218}\) It was only in the ninth century that the Arab-Islamic philosopher and scientists Ḥunayn ibn Ḥāq (c. 808–873 CE) established what was to become the canonical tripartition of *pneuma* in relation to functions and parts: psychic *pneuma* (cognitive and sensorimotor functions within the brain and nerves), vital *pneuma* (pulsative and respiratory

\(^{216}\) Smith 2010, 12 provides vivid description of the process by which vital *pneuma* is squeezed out from the arteries into the cerebral ventricles, and there transformed into psychic *pneuma*. Regarding Herophilus, see Rocca 2003, 38fn134: “Whether Herophilus utilised ‘natural pneuma’ or the specialised ‘sensory pneuma’ (an analogue of psychic pneuma) is also problematic.” Cf. von Staden 1989, 253–54.

\(^{217}\) Gal., *PHP* 5.7.3: ἐτὶ δ᾽ ἂν μᾶλλον ἐλπίσαις γίγνεσθαι τὸ πνεῦμα τοῦτο τῶν ἄγγελων ἀναπνεόντων αὐτὸ καὶ μᾶλλον τῶν ἀρτηριῶν εἰς τὰς κοιλίας τοῦ ἐγκεφάλου ... . ὡσπερ δὲ τὸ ζωτικὸν πνεῦμα κατὰ τὰς ἀρτηριὰς τε καὶ τὴν γεννᾶται τὴν ὑλὴν ἔχον τὴν γενέσιν ἐκ τῆς ἐσπνοῆς καὶ τῆς τῶν χυμῶν ἀναθυμιάσεως, οὕτω τὸ ψυχικὸν ἐκ τοῦ ζωτικοῦ καταργασθέντος ἐπὶ πλέον ἔχει τὴν γένεσιν. On Galen as evidence for Erasistratus’s position, see Rocca 2003, 64: “Galen’s polemical stance aside, it would appear that he may have taken up the general Erasistratean thesis when he discusses the transformation of vital *pneuma* (via the heart) to psychic *pneuma* in the brain, albeit via the elaborating agencies of two other vascular structures there—the retiform and choroid plexuses—rather than the meninges.” See also Rocca 2012, 636.

\(^{218}\) Rocca 2012 discusses the historiographical “reconstruction” of a tripartite *pneuma* (psychic, vital, natural) in Galen, and argues that it is unlikely that Galen consistently upheld a “natural *pneuma*.” See also Fancy 2013, 78, on the bipartite division of Galen’s *pneuma* (psychic and vital) in contrast to Galen’s tripartite psychophysiology (psychic, vital, and natural).
functions within the heart and arteries), and natural *pneuma* (generative, digestive, and excretory functions within the liver and veins).\(^{219}\)

ii. *Hêgemonikon*

In Stoic philosophy, *pneuma* was a mixture of fire and air, identical with both the World Soul and the soul of the individual animal.\(^{220}\) As *pneuma*, soul was material.\(^{221}\) In this respect, the body/soul dualism pervasive in ancient philosophy was, in Stoicism, not a dualism of material/immaterial entities, but rather represented the relationship between two material entities, one finer than the other, and responsible for faculties of animation, such as perception, locomotion, and thought.\(^{222}\) The identification of material *pneuma* with soul was rooted in the Stoic belief that everything that acts or is acted upon is a body.\(^{223}\)

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\(^{219}\) Temkin 1962, 104–05; Rocca 2012, 645–48. Note that in this later model, blood and *pneuma* flowed together through the arteries and veins. Bono 1984 offers a short and precise account of *pneuma* from Galen through to the Arab-Islamic and European medieval periods. See also the short discussions in Siegel 1968, 186; Caciola 2003, 179.

\(^{220}\) Hahm 1977, 137–84 is critical for Stoic cosmobiology. See also Stead 1977, 176–77; Colish 1985, I, 24: “*pneuma*, the fiery breath of life, the creative fire,” cited as one of the Stoic names for “God.” For Stoic physics in general, see ibid., 22–7. Long and Sedley 1987, I, 47C (= Cic., *ND* 2, 23–5, 28–30), and ibid., 280–94 for more general testimonia on *pneuma* in Stoic thought. On the *pneuma* of the World Soul, see Verbeke 1991, 12: “All parts of the universe are interdependent: They could not exist separated from each other. The cosmos is a living organism, animated and permeated by the creative Spirit or Reason. The soul of each individual is a particle of the divine substance that penetrates everywhere. Because of this divine animation, all parts of the cosmos are interrelated.”

\(^{221}\) On soul as a body in Stoic physics, see Annas 1992, 39–43. On the Stoic soul as a body, see von Staden 2000, 96–100.

\(^{222}\) For this distinction, see D. Martin 1995, 3, and also 10: “To understand the Stoic conception of the human self, in particular the soul, we must free ourselves of modern notions according to which soul and body, mind and body, the psychological and the physical, occupy positions on either side of an immaterial/material dichotomy and think instead of nature as a spectrum.” See also Colish 1985, I, 23: “The main objective of Stoic physics is to overcome the dualism between mind and matter taught by other Greek philosophical schools.” On soul/body dualisms in Platonist, Aristotelian, and Stoic philosophy, see Long 1982, 34–6; on Stoic materialism, see
Stoic *pneuma* was differentiated by its tension (*tonos*). At the lowest level of tension, an object has *hexis* (structure), that is, it has *hektikon pneuma*. Examples of objects that have only *hektikon pneuma* include stones and metals. At a higher level of tension, the object is a plant, possessing *phusis* (nature), or *phusikon pneuma* (natural *pneuma*). Higher one level still, the object is an animal, and has *psuchê* (soul), or *psuchikon pneuma* (psychic *pneuma*). Finally, there is the human being, which possesses—in addition to *hexis*, *phusis*, and *psuchê*—*logos* (reason) also. According to Stoic accounts, the natural *pneuma* of the plant-like embryo either is transformed into, or accumulates, vital *pneuma* upon graduation to an embryo, and *psuchê* (soul), or psychic *pneuma*, upon birth. This development was wrought by the changed tension of the *pneuma*. All things thus subsist along a pneumatic continuum.

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ibid., 36 and Annas 1992, 37–8. Note that the Stoics consider the soul, while material, to be a thing distinct from the body (von Staden 2000, 96–7).

223 Colish 1985, I, 23; Long and Sedley 1987, I, 272; Annas 1992, 42, inc. fn15. On late antique criticism of the Stoic claim that all things that exist are corporeal, see Boeri 2001, which seeks to defend the Stoic account as more nuanced than later philosophers gave it credit for being.

224 Colish 1985, I, 24: “*tonos*, the vital tension holding everything together within itself and making the whole universe cohere,” cited as one of the Stoic names for “God.” See also Long 1999, 566: “Psychic *pneuma* differs from other *pneuma* not in its basic mode of blending with grosser bodily structures, but by the ‘tension’ (one is tempted to say ‘wave-length’) of its motion.” Rocca 2012, 635 emphasises that the Stoics do not observe a “*qualitative* change in *pneuma*” (emphasis in original), but rather differentiate between kinds of *pneuma* based on degree of tension.

225 Von Staden 2000, 102: “It is historically plausible that Chrysippus’s radical distinction between nature and soul … was prompted by Herophilus’s distinction between ‘psychic’ and ‘natural’ capacities within a living being … and by Erasistratus’s distinction between ‘psychic’ and ‘vital’ functions.”

226 Gill 2006, 253–54: For the Stoics, reason is the highest manifestation of tension, which constitutes objects, including animals, as stable and structured entities.” See also the clear discussion in Graver 2007, 19–21.

227 Rocca 2012, 635: “According to Plutarch, Chrysippus maintained that pneuma in the foetus was changed at birth by the outside air to become ‘vital pneuma’, held to be the equivalent of soul … The pneuma of the growing Stoic embryo is said to be natural (*phusis*). At gestation it changes its status, becoming vital.” Long 1982, 43–5 discusses the same passage in Plutarch, but comes to the opposite conclusion, that “[t]he animal’s soul is a principle additional to, and
Psychic *pneuma* operates from the *hêgemonikon*, which is located within the heart.\(^{230}\) The late antique bishop Calcidius quotes the Stoic philosopher Chrysippus as follows:

Then the parts of the soul, flowing from the seat of the heart as if from the head of a stream are spread out through the whole body, and fill all the limbs in every part with vital *pneuma* [Lat. *spiritus*]. They rule and govern with innumerable, different powers—nutrition, growth, movement in space, instruction by the senses, impulse to action. And the entire soul extends the senses, which are its own proper functions, just like branches from that trunk-like principal part, so that they will be messengers of the things which they sense; and like a king it judges those very things about which they report.\(^{231}\)

The “parts of the soul” were eight in total: the five senses (sight, hearing, smell, taste, touch), the reproductive faculty, speech, and the *hêgemonikon*.\(^{232}\) Much like the nervous system, the first subsequent upon, a coherent, growing organism.” That is, the animal has vital *pneuma* in addition to natural *pneuma*.

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\(^{229}\) For the continuum of *pneuma*, see Sambursky 1959, 21–48; Colish 1985, I, 23. See also ibid., 27: “Just as the universe as a whole has *tonos*, *pneuma*, and *logos* holding it together, so each individual thing in the universe has its own *tonos*, *pneuma*, and *logos*... . All things are thus related to the cosmic *pneuma* and to each other, since *tonos* and *pneuma* are the same whether operating on a cosmic level or on the level of the individual being.”

\(^{230}\) Solmsen 1961, 180; Annas 1992, 61–6; Graver 2007, 21–3. It must be noted, however, that psychic *pneuma* was thought to pervade the entire body of the animal, and was not confined within any single organ. See Gal., *PHP* 3.1.10–15, discussed in Long 1999, 567, and also Rocca 2003, 62: “although the term psychic pneuma was used by the Stoics, and changes in its tensional state were said to account for individual action, pneuma was not linked to any specific part of the body. Pneuma, then, does not have to change from vital to psychic to underwrite the actions of the Stoic *hegemonikon*, as it must in Galen’s account. ... Stoicism underwrites the transformation of pneuma from a purely general principle of animation to one adaptable to more specialised physiological needs.”

\(^{231}\) Long and Sedley 1987, I, 53G = SVF II, 879, part = Calc., *Comm. in Plat. Tim.* 220: *Porro partes animae uelut ex capite fontis cordis sede manantes per uniuersum corpus porriguntur omniaque membra usque quaque uitali spiritu compend reguntque et moderantur innumerabilibus diuersisque uirtutibus nutriendo adolendo mouendo motibus localibus instruendo sensibus compellendo ad operandum totaque anima sensus, qui sunt eius officia, uelut ramos ex principali parte illa tamquam trabe pandit futuros eorum quae sentiunt nuntios, ipsa de his quae nuntiauerint iudicat ut rex. Cf. Gal., *PHP* 3.1.1.

seven of these parts spread outward from the centre like a spider, like an octopus, or like a plant.233

As A. A. Long has written, the hêgemonikon “is the seat of consciousness and to it belong all the functions which we would associate with the brain.”234 Indeed, the hêgemonikon was theorised within a long-standing debate regarding whether psychic governance operated out of the heart or brain.235 In contemporary scholarship, this is schematised as a division between “cardiocentrist” and “encephalocentrist” perspectives.236 According to common account, the Stoics, Aristotle, and some Hippocratic physicians held a cardiocentrist view.237 The Judaeo-
Christian scriptures also emphasised the heart as the source of life and intelligence within the human body. Other Hippocratic authors, Plato, the Alexandrian scientists, and Galen are said to espouse an encephalocentrist perspective. Late antique Christian theologians, caught in the tension between these two poles, tend to assume an encephalocentrist model for cognitive and sensorimotor activities, but at the same time retain the heart as the seat of life.

Conclusion

The Hellenistic period saw the development of concepts that were to become canonised in medical constructions of the brain and its relationship to body and soul. These were, above all, the neura, the hegemonikon, and the differentiated pneuma that moved between them. By late antiquity, as we shall see in the following chapters, these terms were in common usage, such that preachers could build elaborate metaphors around the hegemonikon as monarch, or envision the Holy Spirit (pneuma) permeating the neura within the body of the church. That is to say, the


North 1993 makes the important argument that the common wisdom that the Hebrew scriptures prefer the word “heart” for the centre of human life is mediated through the overwhelming use of καρδία in the Septuagint. North suggests that the word lēb, which lies behind many references to καρδία, might plausibly have included within its semantic range the brain and nervous system. See also Mumford 1992; M. S. Smith 1998; Lockett 2011, 131–35.


Gilbert 2014 examines fourth-century reception of the question “Where is the seat of the hegemonikon?”, and notes that Jewish and Christian authors answer it inconsistently (see, e.g., ibid., 56 [Philo] and 89 [Clement]).
high-level concepts theorised by Herophilus, Erasistratus, Chrysippus, and others had permeated popular understanding about the brain. How did this popularisation come about?

One answer lies in the compelling syntheses and demonstrations put forward by the medical author Galen, whose writings continued to structure medical education into the early modern period. In the final section, therefore, we turn to Galen’s account of the brain and nervous system, and in particular to his modes of polemic against alternative and earlier models. In the detailed descriptions of the material brain that Galen provides as proof for his arguments about the *hêgemonikon*, we can perhaps most directly access the modes of pedagogy through which our late antique authors learned the nature of the brain.

4. Galen and the Hegemony of the Brain (2\textsuperscript{nd}–3\textsuperscript{rd} Centuries CE)\textsuperscript{241}

The physician and medical author Galen of Pergamum (c. 130-215/6 CE) was to become the central authority in medical theory during late antiquity, the medieval period, and into early modernity.\textsuperscript{242} His works were excerpted extensively in fourth-century medical works, such as the

\textsuperscript{241} The chronological gap between parts three and four reflects a period of relative silence in extant medical tradition: That is not to say that there were no intermediary medical authors, but rather that Galen’s synthesis of earlier theories and accounts dominated later practises of textual transmission (see Nutton 2005 for a discussion of Galen’s dominance of our vision of ancient medicine). One group of writers who developed the concepts we have been considering during the first and second centuries CE, but who are not considered here are early Christian authors. We shall consider these further in chapter two, especially part one.

\textsuperscript{242} On the development of “Galenism” as a standard medical doctrine, see Temkin 1973; Ballester 2002. See also Dols 1992, 18: “Largely as a result of his promotion by the medical school of Alexandria, Galen’s system of medicine came to dominate the field in late antiquity. ... The study primarily of selected works of Galen and the implementation of his theory of medicine, centring on the notion of humoral pathology, became the core of professional medicine for centuries in the Middle East.” On the refutation of Galenic brain science by the early modern scientist Vesalius, see Finger 2001, 60–5. See also the nuanced remarks in Siraisi 1997, 2: “the task [Vesalius] set himself was the critical reworking of ancient anatomy for modern readers. Accordingly, his attitude to Galen, his principal ancient predecessor, was a complicated mixture
important texts of the imperial physician Oribasius (c. 320–400 CE). They also became the foundation for the medical curriculum in Alexandria, as attested by fifth- and sixth-century commentaries. While late antique Christian authors do not by any means adhere religiously to Galen’s teachings, they do appear to work largely within a Galenic medical framework.

In particular, Galen was renowned for his systematic anatomical investigations of the nervous system and the brain. As Martensen has observed, Galen’s contribution was above all

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243 Temkin 1973, 64: “Oribasius marks the terminus a quo we can safely speak of Galenism in medicine. The medical encyclopedists who followed him during the next two hundred years reveal a similar dependence on Galen, especially in the theory underlying their therapeutically oriented works.” On Oribasius as imperial physician, see Baldwin 1975; for a brief account of Oribasius and his methods of composition, see Grant 1997, 1–17. The text of Oribasius’s Medical Compilations is woven out of earlier medical texts, chiefly those of Galen. See fn5, above, on revisionist approaches which cast this mode of composition as creative intellectual labour.

244 Temkin 1935 (Galenic texts in the Alexandrian syllabus); Iskandar 1976 (a detailed reconstruction of the syllabus as a whole, based on Arabic medical texts); Dickson 1998 (a commentary on Galen’s Therapeutics to Glaucon); Pormann 2010 (medical education in late antique Alexandria).


246 Thus, R. M. Young 1970, 10 launches his account of cerebral localisation in the modern period with reference to, among others, the work of Galen: “Speculative localization of functions, based on the belief that the brain is the organ of the mind, is as old as Herophilus and Galen, that is, as old as anatomy and physiology themselves.” As we have seen, anatomy and physiology predate both Herophilus and Galen, but what Young is referring to here is the identification of the cerebral ventricles and the sensory and motor nerves for which both of these authors were to become famous. See, similarly, Swanson 2012, 5 (citing “Hippocrates, Aristotle, and Galen,” to the exclusion of, among others, Herophilus and Erasistratus). In more (colourful) detail, Smith 2014, 2 writes, “The last great alumnus of the Alexandrian medical school, Claudius Galen, half a millennium after Herophilus and Erasistratus, developed the Alexandrian neurophysiology .... He also dissected the brain to show that it contained four ventricles .... Galen also described two
the systematisation and the codification of theories and terms that had already enjoyed long and fruitful lives within medical discourse, as well as the vivid description of anatomical experiments, which he utilised as evidence for disproving the cardiocentric model which he attached chiefly to the Stoics.²⁴⁷ In contrast to the Stoics, Galen sought to localise the *hêgemonikon*, which he assimilated “to the Platonic concept of the rational part” (λογιστικόν) of the soul, within the brain.²⁴⁸ He also questioned the Stoic identification of *pneuma* with the soul, judging that *pneuma* was more likely to be the first instrument of soul than soul itself.²⁴⁹

Galen’s Platonism is perhaps why late antique preachers and theologians—many of whom were trained in Platonist philosophy—tended to find Galen’s psychophysiology persuasive.²⁵⁰ It is important, therefore, to begin this section with a detour into Plato (420s–340s BCE), and in particular the *Timaeus*, which was a touchstone text for the encephalocentrist position in late antiquity. Following a brief account of Plato’s localisation of the rational soul in the brain, we turn to Galen, examining his premise that “the instrument of the *hêgemonikon* is the *archê* (source) of the nerves.” On the basis of this premise and the anatomical experiments which

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²⁴⁷ Martensen 2004, 5: Galen “systematically incorporated previous medical knowledge, codified humoral theory, and actively pursued anatomic investigation.”
²⁵⁰ Although his equivocation on questions such as whether it is necessary to posit a separable, immortal soul in texts such as *That the faculties of the soul follow the mixtures of the body* (see, for example, Hankinson 1991, 201) made him anathema to some theologians (see chapter two). On Galen’s Platonism, see de Lacy 1972; Hankinson 1991, 197–208.
Galen developed as proof texts of a kind, Galen established medical encephalocentrism as the default model for articulating the relationship between body and soul in late antiquity.

i. Plato’s *Timaeus* and the Rational Part of the Soul

Plato is often cited as the originator of the immaterial soul, launching a trajectory of soul/body dualism that would extend long past late antiquity. While some have questioned the strength of Plato’s actual dualism, it is certainly true that Plato’s teachings insisted upon a “strong distinction between soul and body,” which was to become immensely influential in later philosophical and medical thought as a doctrine attached to Plato’s name. Particularly salient for the history of the brain was Plato’s tripartite division of the soul: the rational part (λογιστικόν), the spirited part (θυμοειδής), and the appetitive or desiderative part (επιθυμητικόν). In his mythopoetic treatise *Timaeus*, Plato presented an account of how these

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251 I use the translation of Zeyl (Cooper and Hutchinson 1997) throughout, except where otherwise stated.
252 See, for example, Robinson 2000, 37: “The works of Plato are unique on a number of counts, not least that they contain the first fully articulated account of the relationship between soul (psychē) and body (sōma) in Western literature.” The touchstone Platonic text for the immaterial soul is Pl., Phd. 78b4–84b8. On later receptions of Plato’s dualism, see Emilsson 1994 (Middle Platonism and Plotinus); Broadie 2001 (Descartes).
253 Elkaisy-Friemuth and Dillon 2008, 2 and, for the reception of Plato’s doctrines of soul, passim. Gerson 1986, offers an important close reading of the reasons for Plato’s dualistic account of the body and soul, and notes that “[o]ccasionally, one reads a reference to ‘Platonic dualism’, not so much as a clearly defined alternative to Cartesian dualism but rather as an inchoate or loose version of Descartes’ doctrine” (352). What Gerson highlights here is the importance of examining Plato’s model of body and soul, the material and the immaterial, in its own terms, rather than as a variant of a later theory. For the debate over whether Plato was in fact a dualist at all, see de Vogel 1986 [1972], which argues that Plato maintains only a “weak dualism,” and D. Martin 1995, 11–2, which argues against seeing a “radical dualism” in Plato.
254 Pl., Resp. 4, 440e–441a. See Johansen 2000. Burnyeat 2006 defends the tripartite psychology that Plato puts forward in *Republic*, and also surveys the critiques that philosophers have put forward. Johnstone 2009 investigates the governing aspect of each of these three parts of the soul.
three parts of the soul were located within organs within the body. This account was to become foundational for later authors who identified the brain as seat of the rational (λογιστικόν) or governing (ἡγεμονικόν) part of the soul.255

Plato’s account is framed by a macrocosm/microcosm parallel that pervaded ancient philosophy.256 This analogy, in Timaeus at least, encompasses not the body as a whole, but the head, and not the soul as an entirety, but that part of it which is rational, sovereign, and divine. Unlike the human body, the cosmos has no need to interact with the outside world—indeed, it has no outside world with which to interact. This means that it does not need organs for

On the “divided soul” in Platonist psychology more generally, see the essays collected in Barney, Brennan, and Brittain 2012.

255 Gilbert 2014, 10: “Plato’s Ti., the main source for his teaching on the ruling faculty, provides therefore the philosophical foundation of most later encephalocentric theory and, more importantly for the purposes of this study, is the treatise that most directly influences Philo and, through him, Gregory’s Christian predecessors.” For the importance of Plato’s Timaeus in Galen’s medical investigations, see Hankinson 1991. It should be noted that in the Timaeus, the part of the soul embedded within the brain is named the “most sovereign” (Pl., Tim. 90a2–3: κυριωτάτου) and the “divine” (Pl., Tim. 41c7: θεόν), the “most divine” (θειότατόν), and the “master of everything else inside us” (Pl., Tim. 44d5–5: τῶν ἐν ἡμῖν πάντων δεσποτῶν)

256 Lloyd 1966, 232–72 especially 252–55. Hippocratic examples cited by Lloyd for the body as an image of the cosmos include On the nature of the human being and On regimen 1 (252–53). The term μικρόν κόσμον is attributed to the atomist philosopher Democritus (B 34 DK)—see McKirahan 2010, 328–29. See also the references to other Greco-Roman philosophers in Anderson 2011, 27. Cf. D. Martin 1995, 16 on the strength of the analogy: “the human body was not like a macrocosm, it was a macrocosm—a small version of the universe at large.” On later reception of the ancient microcosm/macrocosm parallel, see Harrison 1998, 47–56, esp. 47–88: “The model which medieval thinkers were to rely upon to establish such connexions in nature was thus the ancient idea of microcosm–macrocosm, a conception employed in biblical exegesis, but one which, as Plato had intimated in the Timaeus, could also be applied to the world. From very early in the Christian era, Plato’s suggestion that the human frame mirrors the shape of the universe had been adapted to the business of biblical interpretation.” It is notable that one of the first authors Harrison cites in this regard is the Jewish exegete Philo, whose influence on Christian authors was immense (see Runia 2001, 57 and Adams 2008, 12 for the role of Graeco-Roman thought in Jewish philosophy, including, above all, the influence of Plato’s Timaeus on Philo). The influence of Plato’s Timaeus on Philo (as well as on Galen) is one reason why this text is so pertinent to the consideration of the brain in the late antique Christian imagination.
perception, respiration, digestion, or excretion.\textsuperscript{257} Indeed, it does not even need hands or feet.\textsuperscript{258} Instead the creator god “has apportioned to it movement suited to its body, one of the seven motions which is especially associated with understanding (\textit{vo\-ôv}) and thought (\textit{phrônêsi-}).”\textsuperscript{259} In the analogy between human body (microcosm) and universe (macrocosm), rational thought is the \textit{tertium quid}. The brain is therefore the only organ to be shared.

Further on in the text, however, Plato introduces a second macrocosm-microcosm analogy which incorporates the other parts of the body and soul. In this instance, the focus is not cosmic but political and architectural.\textsuperscript{260} The “divine part” of the soul is contained within the

\begin{quotation}
\textsuperscript{257} Pl., \textit{Tim.} 33c: ὡμάτων τε γὰρ ἐπεδείτο οὐδὲν, ὡρατόν γὰρ οὐδὲν ὑπελείπετο ἐξοθεν, οὐδ’ ἁκοῆς, οὐδὲ γὰρ ἀκουστόν· πνεύμα τε τὸ οὐκ ἦν περιστὸς δεόμενον ἀναπνοῆς, οὐδ’ αὐ τῶν ἐπιδεές ἦν ὄργανον σχεῖν ὃ τὴν μὲν ἐς ἀυτὸ τροφήν δέξοιτο, τὴν δὲ πρότερον ἐξικμασμένην ἀποσέμψασε πάλιν. ἀπεὶ τὰ γὰρ οὐδὲν οὐδὲ προσήθειν ἄυτο ποθὲν—οὐδε γὰρ ἦν—ἀυτὸ γὰρ ἀυτὸ τροφήν τὴν ἀυτοῦ φθεῖσιν παρέχον. “It needed no eyes, for there was nothing audible there, either. There was no air enveloping it that it might need for breathing, nor did it need any organ by which to take in food or, again, expel it when it had been digested. For since there was nothing else, there would be nothing to exit or enter from anywhere. It supplied its own waste for its food.”
\end{quotation}

\begin{quotation}
\textsuperscript{258} Pl., \textit{Tim.} 33d3–34a1: χειρόν δὲ, αἰς οὐτε λαβείν οὔτε αὐ ὶ τίνα ἄμυνασθαι χρεία τις ἦν, μάτην οὐκ ὑπέκειτο δὲν αὐτὸ προσάπτειν, οὐδὲ ποθὸν οὐδὲ ὅλους τῆς περὶ τὴν βάσιν ὑπηρεσίας. “And since it had no need to grasp at anything or defend itself, [the god] thought that it would be pointless to attach hands to it. Nor would it need feet or any support at all for standing.”
\end{quotation}

\begin{quotation}
\textsuperscript{259} Pl., \textit{Tim.} 34a1–3: κύκνησιν γὰρ ἀπένειμεν αὐτῷ τὴν τοῦ σώματος οἰκείαν, τῶν ἐπτὰ τὴν περὶ γοῦν καὶ φρόνησιν μάλιστα οὕσαν.
\end{quotation}

\begin{quotation}
\textsuperscript{260} See in particular Manuli and Vegetti 1977 for a politicised reading of ancient attempts to localise the governing soul. They argue cogently that Plato’s model outlined here, while recognised generally as the fount of “encephalocentrism” in fact differs from both “cardiocentrism” and “encephalocentrism,” which they see as inherently monarchical models, insofar as the brain and the heart share between them the activities of soul (bodily control; perception), thus mirroring a more democratic system (10–22). Shields 2014 similarly argues for the importance of politics over cosmology for understanding Plato’s divisions of the soul. The analogy between the human body and the political body was entrenched in ancient thought. See, for example, Gleason 2009, 85: “The body is a metaphor for the world. ... The intact body is a powerful symbol of organic unity and, at least to the ancients, the smooth functioning of its component parts under central direction was a figure for the smooth functioning of a hierarchical society.” (Gleason goes on to describe Galen’s vivisections as a metaphor for disturbance and disintegration in the body politic.) One oft-cited example is the story of internal bodily/civic
head, Timaeus explains, which is held above the rest of the body. In order to protect it from the pollution of its fellow members, the latter are relegated to the region below the neck, respectively in the heart and below the midriff:

Now the part of the mortal soul that exhibits manliness and spirit, the ambitious part (sc. \textit{to thymoeidès}), they settled nearer the head, between the midriff and the neck, so that it might listen to reason and together with it restrain by force the part consisting of appetites (sc. \textit{to epithymêtikon}), should the latter at any time refuse outright to obey the dictates of reason (\textit{λόγος}) coming down from the citadel.\textsuperscript{261}

Situated between the rational and the appetitive parts, the spirited part of the soul acts as intermediary between the ruler and the unruly populace.\textsuperscript{262} Indeed, as Timaeus continues, “the heart is in the guardhouse,” ready to transmit commands to all parts of the body through the vessels of the blood:

The heart, then, which ties the veins together, the spring from which blood courses with vigorous pulse throughout all the bodily members, they [sc. the lower gods] set in the guardhouse (τὴν δορυφορικὴν οίκησιν). That way, if spirit’s might should boil over at a report from reason that some wrongful act involving these members is taking place—something being done to them from outside or even something originating from the appetite within—every bodily part that is sensitive may be keenly sensitised, through all the narrow vessels, to the exhortations or threats and so listen and follow completely.\textsuperscript{263}

\textsuperscript{261} Pl., \textit{Tim.} 70a2–7: τὸ μετέχον οὖν τῆς ψυχῆς ἀνδρείας καὶ θυμοῦ, φιλόνικον ὄν, κατάκυσαν ἐγγυτέρω τῆς κεφαλῆς μεταξὺ τῶν φρενῶν τε καὶ αὐχένων, ἵνα τοῦ λόγου κατήκουν ὃν κοινὴ μετ’ ἐκείνου βια τὸ τῶν ἐπιθυμιῶν κατέχοι γένος, ὅποτ’ ἐκ τῆς ἀκροπόλεως τῷ τ’ ἐπιτάγματι καὶ λόγῳ μηδαμὴ πείθεσθαι ἐκὸν ἔθελοι.

\textsuperscript{262} On Plato’s “spirited” part of the soul, and its relationship to the “appetitive” part, see Wilburn 2014.

\textsuperscript{263} Pl., \textit{Tim.} 70a7–70d8: τὴν δὲ δὴ καρδίαν ἄμμα τῶν φλεβῶν καὶ πηγὴν τοῦ περιφερομένου κατὰ πάντα τὰ μέλη σφοδρὰς αἵματος εἰς τὴν δορυφορικὴν οίκησιν κατέστησαν, ἵνα, ὅτε ζέσειν τὸ τοῦ θυμοῦ μένος, τοῦ λόγου παραγγείλαντος ὡς τὶς ἄδικος περὶ αὐτὰ γίγνεται πράξεις ἐξωθὲν ἢ καὶ τὶς ἀπὸ τῶν ἐνδοθεν ἐπιθυμιῶν, ὃς δὲ πάντων τῶν στενωπῶν πάν ὅσον αἰσθητικὸν ἐν τῷ σώματι, τῶν τε παρακελεύσεων καὶ ἀπειλῶν αἰσθανόμενον, γίγνοιτο ἐπήκουν καὶ ἐποίητο πάντη.
Plato renders the soul/body relationship as analogous to the relationship between political community and civic architecture. This was to prove an immensely successful conceptual strategy in later philosophy and psychology, as we shall see further in chapter two. Galen, however, as much as he grounded himself within a Platonist framework, disputed the imagistic quality of Plato’s account, and insisted upon anatomical experimentation over invocations of rulership and the “king.”

ii. The Organ of the Ηêgemonikon is the Archê of the Nerves

Galen rejected Plato’s mythopoetic arguments in favour of *apodeixis* (“demonstration”). In particular, he developed logical arguments that relied upon anatomic proofs in order to persuade his elite readers and audiences that Stoic cardiocentrism was unscientific, and that medically-informed encephalocentrism was the only viable model for the relationship between the body

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264 Gal., *PHP* 2.4.17.1–18.3: οὐδὲ γὰρ ὅτι καθάπερ ἐν ἀκροπόλει τῇ κεφαλῇ δίκην μεγάλου βασιλέως ὁ ἐγκέφαλος ἵπτεται, διὰ τούτ’ ἔξ ἀνάγκης ἢ τῆς ψυχῆς ἀρχῆς κατ’ αὐτόν ἔστιν, οὐδὲ ὅτι καθάπερ τινᾶς ὀρυτόροφος ἐξεῖ τάς αἰσθήσεις περιφροσύνας, οὐδ’ εἰ γε καὶ τούτῳ λέγει τις, ὅπερ οὐρανὸς ἐν ὅλῳ τῷ κόσμῳ, τούτ’ ἐν ἀνθρώποις εἶναι τήν κεφαλήν καὶ διὰ τοῦθ’, ὅπερ ἐκεῖνος ὁἰκος ἔστι τῶν θεῶν, οὖτω τὸν ἐγκέφαλον οἶκον εἶναι τοῦ λογισμοῦ. καὶ γὰρ τὰ τοιαῦτα πάντα καὶ πρὸς ὅντα πολὺ [μὲν] πιθανότερα τῶν ἐπὶ τῆς καρδίας εἰρημένων, ὅπως οὖν ἔστιν οὐδὲ αὐτὰ πιστὰ πρὸς ἐπιστήμην ἁκριβῆ. “Nor is it necessary that because the brain, like the Great King, dwells in the head as in an acropolis, for that reason the ruling part of the soul is in the brain, or because the brain has the senses stationed around it like bodyguards, or even if one should go so far as to say that as heaven is to the whole universe, so the head is to man, and that therefore as the former is the home of the gods, so the brain is the home of the rational faculty. Although statements such as these are all much more plausible than those others about the heart, yet one cannot rely even on these for accurate knowledge.” See the discussion in Tieleman 1996, 41. Hankinson 2009 discusses Galen’s use of apodeictic reasoning in detail. Tieleman 1996, 9–37 examines Galen’s scientific method in his engagement with Stoic arguments regarding the localisation of the hêgemonikon. See also the briefer illustration in Boudon-Millot 2013, 132–33, where *apodeixis* appears as a means of localising psychic illnesses. Schiefsky 2012, 332–33 discusses Galen’s engagement with Plato’s tripartition, and suggests that Galen finds in Plato’s *Republic* an apodeictic account of the tripartition of the soul.
and the ruling or rational part of the soul. Raised in Pergamum and trained in both Alexandria and Smyrna, Galen spent the better part of his career in Rome, where he ministered to high-paying clients, wrote many books on varied subjects, and performed anatomical demonstrations to audiences of other philosophers, doctors, students, and the educated elite.

Among the earliest and most thorough texts in which Galen laid out his arguments against Stoic philosophers is the long work *On the opinions of Hippocrates and Plato*, in which Galen sets out to demonstrate that the greatest of philosophers, Plato, and the greatest of doctors, Hippocrates, agreed upon the fundamental principles of the human body and soul. The most important principle, was that the ruling or rational part of the soul, contrary to the arguments of the Stoic philosopher Chrysippus (c. 279–206 BCE, that is, some three hundred years prior to Galen), was to be located within the brain.

The Stoic argument ran as follows: (1) Affective experience clearly takes place within the heart—hence one feels one’s heart jumping or contracting in correspondence to sudden emotion. (2) Affective activity is not separate from rational activity, since, according to Stoic

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265 On Galen’s anatomical demonstrations and his arguments against the Stoics, see Debru 1995 and the references in fn248, above. For Galen’s negotiation of Stoic and Platonist psychologies, see Casini 2010, 507–09. On Galen’s indebtedness to Aristotle’s “critical empiricism,” see Boylan 2007, 208.

266 For recent accounts of Galen’s career, see Siegel 1968, 4–18; Boudon-Millot 2012a; Nutton 2012, 222–34; Mattern 2013. All biographical studies of Galen are grounded in his own writings, especially *On prognosis*, *On my own opinions*, and *On the avoidance of distress*.

267 I use the translation of de Lacy 1978 throughout, unless otherwise noted. On this work, see Hankinson 2006, esp. 232–33.

268 Galen has been found somewhat inaccurate in his reports about both Platonist and Hippocratic doctrines (Lloyd 1988; Steel 2001). Nonetheless, the force of his rhetoric and his proofs reinvigorated the tripartite model of Plato, such that the interactions between brain, heart, and liver might provide a physical substrate for the interactions between the parts of the soul (Hankinson 2006).

269 See Lockett 2011 for the argument that phenomenological experience of emotion grounds theorisation of affective and mental activity as located in the heart.
doctrine, the soul is unified and rational.\textsuperscript{270} (3) Thus, rational as well as affective activity must take place within the heart. (4) The hêgemonikon must be rational, so the hêgemonikon must be located in the heart also.\textsuperscript{271} Galen’s counter-argument was based on the key premise that “where the source (ἀρχή) of the nerves is, there the hêgemonikon is also.”\textsuperscript{272} He then set about proving through anatomical experimentation that the brain is the centre of the sensory and motor nerves.\textsuperscript{273}

a) Anatomical Experiments\textsuperscript{274}

To take one example, let us consider Galen’s influential vivisection of a pig.\textsuperscript{275} Chrysippus had argued that one indubitable sign of the hêgemonikon was the voice.\textsuperscript{276} Indeed, the Greek philosophical tradition in general held that in humankind, the voice, together with the hands, was

\textsuperscript{270} This had implications for Stoic theories of the emotions and their treatment. Hankinson 1993 examines Galen’s opposition to Stoic psychology, in particular their argument that emotions and desires belong to the rational soul
\textsuperscript{271} Gal., \textit{PHP} 3, passim. See also Hankinson 1993, 188–89; Hankinson 2006, 233–34.
\textsuperscript{272} Gal., \textit{PHP} 7.1.5.4–5: ἐνθα τῶν νεύρων ἡ ἀρχή, ἐνταῦθ’ εἶναι τὸ ἥγεμονικόν. According to Galen, the Stoics did indeed acknowledge the importance of the neura, but without attending to the same anatomical evidence that he examined, they located them within the heart. See \textit{PHP} 1 \textit{(Testimonies and fragments of the beginning of Book 1)} 6.
\textsuperscript{273} The premise of Galen’s experiments was that whichever organ is the archê of the nerves must be necessary to their function. Damage to this organ must affect therefore affect sensorimotor function; indeed, damage to the nerves between the central organ and the parts must selectively hamper such functions also. See Tieleman 1996, 48, “This [sc. the function of the nervous system] can only be definitively established by means of vivisection—i.e., by intercepting nerves in a systematic manner and observing the results.” Cf. Debru 1994. This approach was grounded in a teleological view of human construction, on which see Hankinson 1989; Schiefsky 2007a.
\textsuperscript{274} On Galen’s methods of anatomical experimentation upon the brain, see Rocca 2003, 172–81.
\textsuperscript{275} See the description in Gal., \textit{Praen.} 5.9–21 and Gal., \textit{AA} 8.3 (II, 663 K.) and 11.4 (Duckworth 1962), with discussion in Gross 1998; Frampton 2008, 198–200; Gleason 2009, 97–100, Mattern 2013, 157–60. See French 2006, 26–7 for Vesalius’s imitation and critique of this experiment.
\textsuperscript{276} Recall that speech was one of the eight parts of the Stoic rational soul.
the expression of rational thought.277 According to Chrysippus, the physical source of the voice was clearly the lungs. Since the heart was closer to the lungs than was the brain, the heart must be the command centre from which the words given force by the lungs had been dispatched.278 Galen dismisses this “argument by location,” and insists instead that anatomical connection is essential for demonstrating functional connection, while proximity is a peripheral concern.279 Identifying the laryngeal nerve, which runs between the larynx and the brain, as the anatomical connection in question, he designed an experiment to prove his case. Taking a live (and squealing) pig, he opened the animal and ligated the laryngeal nerve. Immediately the animal stopped squealing. Once Galen released the ligation, the animal resumed its cries. Clearly, Galen argues, the laryngeal nerve, descending from the brain, carries the chief impulse for speech into the voice box.

Through his argument that the brain must be the organ of the hégemonikon because it was the source of the nerves, Galen made the nervous system core to his conceptualisation of both the hégemonikon and the brain. Thus, we find Galen arguing, in his later work On the usefulness of the parts, that the brain (ἐγκέφαλος, that is, the “stuff-in-the-head,” ἐν τῇ κεφαλῇ) was to be defined according not to its location but rather to its function as the organ of sensation and of voluntary motion.280 Suggesting first that his reader substitute the Latin name cerebrum

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277 See, for example, Nem. Nat. hom. 1, 4.12–24, esp. 22–4: πάλιν δὲ τὴν ἐναρθροῦν διάλεκτον ἐξής τῆς διανοίας καὶ τοῦ λογισμοῦ ἐξάγγελον ποιήσας αὐτὴν τὸν κατὰ νοῦν κινημάτων. “Again, he linked articulate speech to thought and reasoning, making it a messenger of the movements of the intellect.” As Sharples and van der Eijk 2008, 40fn206 points out, Skard 1937 argues for a Galenic source, the non-extant Protrepticus. Cf. also Nem., Nat. hom. 14, 71.13–14); Greg. Nyss., Op. hom. 10 (PG 44, 152.10–3).
280 Gal., UP 8.4 (III 628.14–15 K.): τῷ γὰρ ἐν τῇ κεφαλῇ κεῖσθαι διὰ τούθ’ οὕτως ἑνὸμασται. This text, translated by May 1968, is “one of the most important treatises for our understanding
(κέρεβρον) for enkephalos, since it did not carry the same localising resonance.281 Galen then pushed his argument against etymological relevance a step further, with the introduction of the (perhaps nonsense) word skindapsos.282

Well, now, instead of cerebrum, let us call it skindapsos, and just as we call any instrument of vision the eye not only when it is in the head but also when it is situated on the breast, so any part of an animal that controls sensation and voluntary motion for the other parts will be called skindapsos. Now, if the enkephalos is the source of will and motion, and if animals having no head but having an enkephalos or something analogous have will and motion of a sort, it is clear that this did not happen through the presence of a head.283

Here, Galen seeks to redefine the brain (ἐγκέφαλος) not as the organ within the head, but as the organ which is at the centre of the sensorimotor nervous system.284 The conditional clause

of Galen’s thoughts of physiology and of his clinical observations” (Siegel 1968, 25). The eighth and ninth books in particular are crucial for understanding Galen’s teachings about the brain anatomy and physiology. Siegel 1968, 25 notes that a critical edition “is under consideration and only partly completed” as part of the Corpus Medicorum Graecorum, but this work appears never to have taken form (Accessed April 17th 2016: http://cmg.bbaw.de/publications/corpus-medicorum-graecorum-1).

281 Gal., UP 8.4 (III 629.1–8 K.).
282 May 1968, I, 395fn35, with reference to similar usage in De diff. febr. 2.6 (VII 348 K.) and De diff. puls. (VIII 662 K.); Rocca 2003, 83; Morison 2008, 133–35. It is worth pointing out that skindapsos was not merely a nonsense word, as May, Rocca, and Morison suggests, but was also a perfectly ordinary noun denoting a “four-stringed musical instrument” (LSJ s.v. A1; Morison 2008, 134fn25 points out this meaning also). Given that, as we shall see in chapter two, musical instruments (especially lyres) were commonly invoked as models for the body/soul relationship, Galen’s choice here is more than suggestive. The brain is being envisioned as a lyre through which the soul makes the music of its rational speech, cf. Gal., UP 7.5, 6 (III 525.16–526.8 and 529.8–11 K.). Flute: Gal., UP 7.13 (III 561.2–9 K.).

283 Gal., UP 8.4 (III 629.8–18 K.): ἂγε δὲ μὴ κέρεβρον, ἀλλὰ σκινδαψός καλείσθω· καὶ ὁσπερ, ὃ τι ἐν ὀπτικῶν ὄργανον ἦ, τοῦτο ὀρθαλμόν ὄνομάζομεν, οὐκ ἔ ἐν τῇ κεφαλῇ μόνον, ἀλλὰ καὶ ἐπὶ τῶν στέρνων ἦ τεταγμένον, οὕτως, ὃ τι ἐν ἐν ἵππῳ μόριον αἰσθήσεως καὶ κινήσεως τῆς κατὰ προαίρεσιν ἦγηται τῶι ἄλλοις, σκινδαψός καλεῖται. εἰ γὰρ ὃ μὲν ἐγκέφαλος ἄρχῃ προαίρεσεως καὶ κινήσεως, προαίρεσιν δὲ καὶ κίνησιν ἔχει τινα μὴ ἔχοντα κεφαλήν, ἀλλ’ ἐγκέφαλον ἢ τὸ ἄναλογον ἐγκέφαλῳ, δήλον, ὃτι οὐ διὰ τὴν κεφαλὴν γέγονεν.

284 On Galen’s concern with scientific names, see von Staden 1995b. Tieleman 1996, 17 presents Galen’s rejection of etymology as a scientific method. The motivation for Galen’s argument is the Stoic observation that some animals, such as crabs, have no heads, and therefore that the organ of the ἱέγεμονικόν must be located in the chest (Gal., UP 8.2 [III 614.9–615.9 K.]).
(“Now, if the enkephalos is the source of will and motion . . .”) is not in fact a conditional at all, but rather establishes Galen’s claim about the functions of the brain as the premise of all further investigation. The enkephalos (or skindapsos) is by definition the “source of will and motion,” and therefore will remain the enkephalos wherever it is located within the body.

Galen conducted other experiments also, which he documented in his handbook On anatomical demonstrations, which was written after both On the opinions of Hippocrates and Plato and On the usefulness of the parts. On anatomical demonstrations was framed as an accompaniment and a reminder to the anatomical demonstrations which Galen had performed for the benefit of his followers, patrons, and opponents in Rome during the 160s and 170s CE. According to one translator, the work was a series of lectures originally delivered by Galen and probably taken down by shorthand on the spot. As this contextual frame suggests, the experiments described are not so much reports of experiments that Galen had tried out as illustrative proofs for his arguments. The readers of his treatise were imagined as performing

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285 On the dating of this text, see Singer 1956, xiv–xv; von Staden 1995a, 52. Only Books 1–11.5 survive in Greek, while Books 11.6–15 survive in Arabic translation. I use the translations of Singer 1956 (1–11.5) and Duckworth 1962 (11.6–15) throughout, except where otherwise indicated. Gleason 2009, 88 envisions the experiments performed as rehearsed to perfection: “It is clear from his manual, Anatomical Procedures, that he practised the same dissection over and over again, in private, before performing publicly.” Claire Bubb has recently completed a dissertation on Galen’s On anatomical demonstrations, titled “Galen's Anatomy: Audience and Context” (Harvard, PhD 2014). I have not yet had opportunity to access this work, but its publication will no doubt shed much light on this little-studied text.

286 Singer 1957, xiii.

287 Cf. Gleason 2009, 94: “Logically, Galen was performing a demonstration, a procedure he sought to augment with the coercive force of mathematical deduction. As he says in another treatise, using βιάζεται again, ‘The phenomenon itself, through dissection, forces even those who maintain the opposite to concede, unwillingly, the truth.’ One way of looking at this encounter is to see it as a form of truth-contest in which a body in extremis is manipulated to provide conclusive evidence.” Von Staden 1995a, 53 emphasises not the evidentiary so much as the exhibitionist aspect of these “illustrative proofs”: “Galen frequently, though not invariable, characterizes public dissection and vivisection not as ‘demonstration’ (apô-deixis, a word which
the experiments for themselves—either upon real animals or in their imaginations—in order to be convinced of Galen’s claims. The treatise offers, therefore, a step-by-step guide to the dissection of animals, including description of the parts the dissector should expect to encounter, instructions about which instruments to use, warnings about difficult manoeuvres (such as those likely to tear delicate membranes), and alternative options for those who lack confidence in their surgical skill.

Most of the treatise is concerned with the dissection of deceased animal bodies. Book nine, however, which is dedicated to the brain, includes first the dissection of a brain detached from the body (that of an ox), then instructions for dissection of the brain within a deceased body (that of an ape), and finally a short description of experiments that one might perform on the brain of a living animal (preferably a pig or a goat) in order to discern its functions. Galen explained the rationale behind this order in the opening chapter of the book:

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Galen freely uses in logical, particularly in syllogistic, and mathematical contexts, but as ‘exhibition’ or ‘display’ (epi-deixis). Indeed, he describes not only his own public anatomical performances but also those of his contemporaries as ‘exhibitions’ or ‘displays’.”

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288 Rocca 2003, 173: “Galen’s anatomical works are not simply textbooks but interactive manuals of dissection in which he maintains and demands an impressively high standard. We know far more about Galen’s early modern students than about his ancient ones. See fn242, above, for early modern critiques of Galen’s anatomical practices and findings. For early modern training in dissection, with reference to the works of Galen, see also Klestinec 2011.

289 For the efficacy of this text as a guide for dissection, see Rocca 2003, which is based upon a reconstruction of Galen’s experiments (cf. Chang 2011 for reflections upon the reconstruction of experiments as historical method).

290 Dissection of ox brain removed from body: Gal., AA 9.1–9, esp. 9.1 (II 708.13–5 K.): ἐτοιμοὶ δὲ τοῦ πίπαν ἐν ταῖς μεγάλαις πόλεσιν ἐγκέφαλοι βόδειοι πιπράσκονται τῶν πλείστων τοῦ κρανίου μερῶν γνωμοί. “Ox brains, ready prepared and stripped of most of the cranial parts, are generally on sale in the large cities.” Dissection of the brain of an ape: Gal., AA 9.10 (Duckworth 1962, 10): “Do you now proceed to the next stage, for here is the place where I must describe to you the method of dissecting the parts of the brain while it remains in its place in the animal body. The dissection is best made in apes, and among the apes in such a one as has a face rounded to the greatest extent possible amongst apes. For the apes with rounded faces are most like human beings.” Dissection of the brain within a living animal: Gal., AA 9.11–13, esp. 9.11 (Duckworth
The anatomy of the dead teaches the position, number, proper substance, size, and construction of the parts. That of the living may reveal the functions at a glance or provide premisses for deducing them. Obviously, then, operation on the dead should precede that on the living.\(^{291}\)

The purpose of book nine, then, was to demonstrate not only the parts of the brain, but their functions also—that is, in this case, sensorimotor function and consciousness.\(^{292}\)

When it comes to the brain of a live animal, therefore, Galen first slices through the skin and the pericranium, then cuts away the bone and peels back the dura mater (that is, the outer cerebral membrane).\(^{293}\) As Galen argues elsewhere, damage to the dura mater did not appear to impede sensorimotor activities, thus refuting the earlier Erasistratean theory that the sensory nerves are rooted in the cerebral membranes—indeed, the only portions of the brain whose integrity is required for sensorimotor function are the cerebral ventricles.\(^{294}\) Galen then probes or

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1962, 15): “I say, then that for this purpose you must procure either a pig or a goat, in order to combine two requirements. In the first place, you avoid seeing the unpleasing expression of the ape when it is being vivisected. The other reason is that the animal on which the dissection takes place should cry out with a really loud voice, a thing one does not find with apes.”

\(^{291}\) Gal., \textit{AA} 9.1 (II 707.4–708.2 K.): \textit{τ}ή\textit{ς ἀνατομής ἢ μὲν ἐπὶ τεθνεῶτος τοῦ ζώου γιγνομένη τήν τε θέσιν ἐκάστου τῶν μορίων διδάσκει, τὸν τ’ ἄριθμον, καὶ τῆς οὐσίας τὴν ἰδιότητα, μέγεθός τε καὶ σχῆμα καὶ σύνθεσιν· ἢ δὲ ἐπὶ τὸν ζῴοντον ἐνίοτε μὲν ἀντικρυς αὐτὴν τὴν ἐνέργειαν, ἐνίοτε δ’ εἰς τὴν ταύτης εὐρεσιν λήμματα. πρόδηλον οὐν, ὡς ἤγείσθαι χρή τὴν ἐπὶ τεθνεῶτος τοῦ ζώου γιγνομένην ἀνατομήν τῆς ἐπὶ ζῴοντος."

\(^{292}\) Gleason 2009, 88: “Dissections designed to discover or to illustrate the fine points of structure had to be seen from close up. They rarely required a live animal and offered little to interest a large crowd. Galen’s vivisections, on the other hand, were generally designed to address disputed questions of function.” See also von Staden 1989, 153, with regard to the earlier Hellenistic scientists: “Herophilus’ differentiation of sensory nerves from motor nerves also points to the use of vivisection for heuristic purposes; dissection alone would not have made this discovery possible.”

\(^{293}\) Gal., \textit{AA} 9.11 (Duckworth 1962, 15–6).

\(^{294}\) Gal., \textit{PHP} 7.3.15–6: ἐκκοπέστος τοῦ τῆς κεφαλῆς ὅστοι ζώντες ἐπὶ τοῦ ζώου καὶ γυμνῆς τῆς παρχείας μήνιγγος γεγομένης ἐὰν ἐκατέρωθην τῆς μέσης εὐθείας, καθ’ ὑπὲρ ἐγκαταβαίνει τῷ ἐγκεφάλῳ διπλωμένη, δι’ ἀγκίστρων ἀνατείνας αὐτήν ἢ τέμης μόνον ἢ ἐκτέμης ὀλυν, οὔτε ἀναστήθην τοῦ ἐκινήτων γίγνεται τῷ ζῷον, ὅσπερ οὖν ἐπὶ τὸ σκέπον αὐτῆς μέρος ὀλυν τὸν ὀπίσθεν ἐγκεφαλὸν ἢ τέμοις μόνον ἢ ἐκτέμοις, οὐ μὴ οὖν ἐπὶ τὸν ἐγκεφαλὸν αὐτῶν ὀποσοῦν ἐκτέμοις, οὖν οὔτως τῷ ζῷον ἐκινήτων ἢ ἀναστήθητοι γίγνεται, πρὶν ἐπὶ τινα τῶν κοιλῶν αὐτῶν
cuts each ventricle of the brain in turn, in order to show that each ventricle plays a role in the
sensorimotor activity—and ultimately in the consciousness—of the animal:

Should the brain be compressed on both the two anterior ventricles, then the degree of
stupor which overcomes the animal is slight. Should it be compressed on the middle
ventricle, then the stupor of the animal is heavier. And when one presses down upon that
ventricle which is found in the part of the brain lying at the nape of the neck, then the
animal falls into a very heavy and pronounced stupor. This is what happens also when
you cut into the cerebral ventricles, except that if you cut into these ventricles, the animal
does not revert to its natural conditions as it does when you press upon them.\textsuperscript{295}

ὀπίσω βλάπτει τὸ κεφαλῆς, εἴρεξής δ’ ἡ μέση: τὸν προσθέαν δ’ ἐκατέρα βραχυτέραν ἐγράμεται τὴν
βλάβην καὶ μᾶλλον μὲν ἐπὶ τὸν πρεσβυτέρων κεφαλῆς, ἢττον δ’ ἐπὶ τὸν νέον. τὰ δ’ αὐτὰ ταῖς εἰς
tὰς κοιλίας τομαῖς αἱ κατ’ αὐτὸν ἐγράμεται θλίψει, ἢς οὐδ’ ἐπιτρέπεται, ἄλλα καὶ πάντα
φυλαττόμενον ὀρθὸν ἐνίοτε γιγνομένας ἐπὶ τὸν ἀνατριμένον ἀνθρώπον, ὡς τῇ τῆς
κεφαλῆς ὀστά καταγγέσαι. “Cutting the posterior (ventricle) harms the animal most, and next
after that the middle (ventricle). Each of the anterior (ventricles) causes less serious injury, and
to a greater degree in older animals, to a lesser degree in the young. Pressure on the ventricles
has the same effect as incision into them; and we see pressure sometimes applied, not
intentionally, but with every effort made to avoid it, in men who are undergoing trepanation,
when the bones of the head have been broken.” As this latter text shows, Galen’s knowledge of
cerebral anatomy and physiology is based not only on anatomical experiments, but also upon
and excision, see ibid., 187–96.
Galen does not explain here precisely why damage to the ventricles sends the animal into a stupor. In his more philosophical work *On the opinions of Hippocrates and Plato*, however, Galen suggests that it is the escape of *pneuma* that halts psychic processes—indeed, he uses this explanation as the basis for his argument that *pneuma* is the first instrument of the soul. Far more vague, as we shall see, is his explanation of precisely how *pneuma* performs the functions which the soul demands.

b) How Does Pneuma Operate Within the Brain and Nerves?

Galen, as we saw in Part Two, identified two kinds of *pneuma*. First, the air that enters the lungs is refined into “vital *pneuma*” within the heart. Second, vital *pneuma* travels with the blood through the arteries into the brain, where it is pressed out into the cerebral ventricles as “psychic

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296 Instead, he transitions smoothly to experiments upon the spinal cord, where he demonstrates that damage to the spine can impair the function of distant limbs, by rupturing the pathway of the nerve. This argument was a particular coup for Galen in his capacity as a physician, and appears elsewhere in his writings as a victory won against rival physicians, who failed to treat the appropriate part of the body (the spine) when, for example, the hand had lost its functions. See, for example, Galen’s cure of Pausanias, who had injured his back but whose fingers were impaired, in Gal., *Loc. aff.* 3.14 (VIII 213.10–214.6 K.). Nerve theory thus proved useful to Galen in two respects: It undermined the cardiocentric arguments of the Stoics, thereby granting the medical practitioner greater authority with regard to the central philosophical question of the body-soul relationship; and it elevated Galen’s status in his professional capacity as a doctor to the Roman elite.


298 Debru 2008, 272: “The experiment works both ways: ‘when the *pneuma* is let out through wounds, the animal immediately becomes like a corpse, but when it has collected again the animal revives’ .... Yet its mode of action is mysterious, and Galen often compares it to the effect of light.”

299 Siegel 1970, 4 interprets this as the “arterialization,” that is, the oxygenisation, “of blood.” On respiration and it problems in Galen, see Siegel 1968 (reliable exposition); Furley and Wilke 1984 (presentation of key texts); Debru 1996 (systematising analysis). For Galen on *pneuma*, see Debru 2008, 271–72 (concise summary); Rocca 2012 (a study of the evasive concept of “natural *pneuma*” in particular).
pneuma.” Gathering in these ventricles, psychic pneuma acts upon, and perhaps enters, the sensory nerves (rooted in the front of the brain, closest to the sensory organs) and the motor nerves (rooted in the back of the brain, closest to the spine).

Beyond this, Galen leaves much of his theory of pneuma non-specific and unresolved. R. J. Hankinson has suggested that pneuma in Galen “functions only as a sort of place-holder.” Armelle Debru remarks that Galen “considers it pneuma to be an ‘instrument’ (organon), although he remains non-committal as to the number of types of pneuma there are and as to its nature, both subjects of some dispute in his time.” This is no casual imprecision. In truth, it was the fuzzy definition of pneuma which enabled it to play a flexible role in theories of the

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300 Siegel 1968, 113–15; Rocca 2003, 202–37; Hankinson 2006, 235. Gal., PHP 7.3.27–8: τὸ μὲν οὖν κατὰ τὰς ἀρτηρίας πνεῦμα ζωτικὸν ἔστι τε καὶ προσαγορεύεται, τὸ δὲ κατὰ τὸν ἐγκέφαλον ψυχικὸν, οὐχ ὡς οὖσία ψυχῆς υπάρχον, ἀλλ’ ὡς ὦργανον πρῶτον αὐτῆς οἰκούσης κατὰ τὸν ἐγκέφαλον, ὧποια τις ἢ τὴν οὐσίαν. ὃσπερ δὲ τὸ ζωτικὸν πνεῦμα κατὰ τὰς ἀρτηρίας τε καὶ τὴν καρδίαν γεννᾶται τὴν ὑπὸν ἔχον τῆς γενέσεως ἐκ τε τῆς εἰσπνοῆς καὶ τῆς τῶν χυμῶν ἀναθυμάσεως, οὕτω τὸ ψυχικὸν ἐκ τοῦ ζωτικοῦ κατεργασθέντος ἐπὶ πλέον ἔχει τὴν γένεσιν. “Now the pneuma in the arteries is and is called vital, and that in the brain is called psychic, not in the sense that it is the substance, but rather the first instrument of soul that resides in the brain, whatever its substance may be. Just as vital pneuma is generated in the arteries and the heart, getting the material for its generation from inhalation and from the vaporization of the humors, so the psychic pneuma is generated by a further refinement of the vital.” But cf. Siegel 1968, 93 for Galen’s objection to Erasistratus’s notion that the arteries are channels solely for vital pneuma: “Galen’s objection ... was supported by his discovery that the arteries contain only blood and no free air as Erasistratus had assumed.” As Siegel observes, Galen assumes that pneuma is mixed in with the blood (ibid., 104–06). Note, finally, that Galen also considers the air dragged in through the nostrils to nourish the cerebral/psychic pneuma (ibid., 106–08; cf. Rocca 2003, 226–34).

301 Siegel 1970, 4: “Generated from the anterior parts of the brain this pneuma [sc. the psychic pneuma] was then slowly eliminated to the outside via the third and fourth ventricles and the sutures of the skull. Additional cerebral pneuma was supposedly furnished by air entering the anterior ventricles directly from the nose along the olfactory nerves.” For the anatomy and physiology of Galen’s brain, see Manzoni 2001, and, above all, Rocca 2003. Galen discusses the anatomical structure and physiology of the brain and the nerves in his treatise On the usefulness of the parts, books eight and nine.

302 Hankinson 2006, 235.

303 Debru 2008, 272. On the question over whether there are two or three kinds of pneuma, see my discussion of pneuma above, in part two, above.
body/soul relationship across multiple philosophical schools and in varied medical, philosophical, and theological contexts, across more than a millennium.\textsuperscript{304} Pneuma was a slippery term, shifting across medical, theological, and philosophical discourses, sometimes carrying resonances from one context over into another, at other times not.\textsuperscript{305}

Galen’s vague descriptions of pneumatic function leave two important, and by now familiar, questions unanswered: (1) Does \textit{pneuma} enter and travel within the (hollow) nerves, or rather transform their (solid) substance?\textsuperscript{306} And (2) is \textit{pneuma} the substance, or only the instrument of the soul? At stake in these two somewhat technical questions about how \textit{pneuma} operates within the brain and the nervous system is the philosophical debate about the nature of

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  \item On the longevity of \textit{pneuma}, see D. Martin 1995, 21: “From the pre-Socratics well into late antiquity pneuma is an important category in the composition of the cosmos and the human body.” On the early beginnings of \textit{pneuma}, see parts one and two, above. The Stoic concept of \textit{pneuma} flourished in early Christian thought (see especially Verbeke 1945; Dünzl 2000; T. Martin 2006; Lee 2006; Engberg-Pederen 2010) and in late antiquity (Gerber 2010). On \textit{pneuma} in Renaissance theories of well-being, see Kenda 1998a and 1998b; for \textit{pneuma} in Renaissance magic, see Couliano 1987 [1984], 107–29. See also the essays collected in Osler 1991 for the development of \textit{pneuma} within the context of materialist scientific models.
  \item For the theoretical flexibility of \textit{pneuma}, see Annas 1992, 25, with regard to Hellenistic medical theory: “Thus pneuma turns out to be an even more resourceful theoretical entity than Aristotle had envisioned; to explain different types of human functioning we postulate different types of \textit{pneuma}. This theoretical flexibility is not yet a weakness, but it is clear that there are few empirical constraints on explanatory appeal to pneuma. It is a dangerously handy theoretical tool.”
  \item The challenges of rendering spirit/\textit{pneuma} in scholarship on early Christianity is illustrated in Barrier 2014: 117n10: “\textit{πνε\diameter{u}}m\textit{a} is often translated as ‘spirit’ in theological discourse. This interpretative decision demonstrates that this word is a loaded word, and I would prefer to leave it as \textit{pneuma} in an attempt to sustain a higher level of objectivity in discussing a concept that, I feel, would be better translated as something like ‘breath’ or, even better, left untranslated.”
  \item See the clear elucidation of this dilemma in Boudon-Millot 2012b, 557: “Although he [sc. Galen] readily admits the existence and usefulness of \textit{pneuma}, which circulates from the brain to the nerves, its exact nature is left open to debate. In particular, Galen questions whether there exists a \textit{pneuma} that originates from and remains in the nerves or, his second hypothesis, whether the \textit{pneuma} flows to the nerves from the brain, but only when we are feeling or moving. A third hypothesis even goes so far as to negate the existence of \textit{pneuma} by claiming the existence of ‘a qualitative change of the continuous parts’ (\text{"{Η} κατά ποιότητα συνεχόν ἄλλοισις}) that extent from the brain to other parts of the body.”
\end{itemize}
soul and its relationship to the body. For Christian authors in late antiquity, these questions are particularly pointed, as they impinge upon eschatological and theological concerns, such as the relationship between the members of the Trinity (and especially the identity of the ἅγιον πνεῦμα, “Holy Spirit”).

Does *pneuma* travel within or transform the nerves? This question we have already encountered in our discussion of Herophilus and Erasistratus. Recall that Erasistratus distinguished between sensory nerves, which he understood to be hollow, and motor nerves, which were not; Herophilus, as far as we can tell from the ancient sources, made no such distinction. In Galen’s anatomical writings, a strong distinction is drawn between sensory nerves and motor nerves, but it has nothing to do with whether they are hollow, and everything to do with their substance: “It was necessary that the front part [of the brain] be softer, being intended as the source of the soft nerves that travel to the sensory organs, while the rear [of the brain] is harder, since this part is to be the source of the hard nerves that are spread abroad throughout the whole body.”

The sensory nerves are soft, we find, because “that which is easily changed is most suitable for all such actions and affections, and that which is softer is always more easily changed than that which is harder.” The emphasis upon teleological explanation for the

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308 Gal., *UP* 8.6 (III 636.13–637.2 K.): οὗτος οὖν τὴν μὲν οὐσίαν ὁμοιότατος ἐστὶ τοῖς νεύροις, ὃν ἔμελλεν ἀρχή γενήσεσθαι, πλὴν ὅσο μαλακότερος αὐτῶν ὑπάρχει. καὶ γὰρ καὶ τοῦτ’ ἔπρεπε τῷ πάσας μὲν εἰς αὐτὸν τὰς αἰσθήσεις ἐκδεξομένῳ, πάσας δὲ φαντασίας φαντασιωθησομένῳ καὶ πάσας νοήσεις νοήσοντι. τὸ γὰρ εὐαλλοίωτον ἐν ἀπασὶ τοῖς τοιούτοις ἐργοῖς τε καὶ παθήμασιν ἐπιπειδειότατον, εὐαλλοιωτότερόν τε ἀεὶ τὸ μαλακότερον τοῦ σκληροτέρου. “This [sc. the brain], then, is extremely similar in substance to the nerves (of which it was intended to be the source), except insofar as it is softer, for in fact this is appropriate for the part which receives all sensory impressions into itself, which conjures all images, and which thinks all thoughts. For that which
substance (ousia) of the sensory nerves suggests at the very least that they are more than merely passageways for the pneuma.

At the centre of this debate is Galen’s observation that there is a visible perforation in the optic nerves. See, for example, Galen’s treatise On the usefulness of the parts. Here, Galen describes the sensory nerves as dried and compressed extensions of brain matter. Of the optic nerves, which are more compressed than the others, he writes as follows: “But it seems that these alone have perceptible poroi within them; and many anatomists call them this [sc. poroi] on this account.” To this sentence, the translator Margaret Tallmadge May attaches a lengthy note, which begins as follows:

Here Galen has persuaded himself that he has seen what he needed to see for the support of his conception ... of the physiology of the nervous system. He believed that psychic pneuma, elaborated in the brain and collected in its ventricles, travels thence through the nerves and is distributed to all parts of the body in order to provide them with sensation and motion. All parts with the exception of the eyes require relatively small amounts of this pneuma, and so the channels conveying it in the nerves are so minute as to be imperceptible.
In other words, Galen’s qualification of the optic *poroi* as “perceptible” (*αἰσθητοῦς*), emphasised in his opening verb “it seems” (*φαίνεται*) is interpreted by May as drawing a contrast between the optic *poroi* (having perceptible channels) and the other nerves (as having imperceptible channels).  

Rudolph Siegel, in his foundational study of Galenic physiology, disagrees:

> We often read that Galen assumed that the peripheral nerves are hollow tubes and that the pneuma is conducted through the nerves like water through a pipe.  

This misrepresentation of Galen’s views delayed both the understanding of Galen’s treatises and the progress of our comprehension of nerve function. Galen clearly stated that only the optic nerve contains a visible longitudinal canal, but that all other peripheral nerves, composed of minute fibers, are solid throughout.

The question hangs, then, on whether one considers Galen to be merely qualifying the channel within the optic nerves as “perceptible,” or as contrasting it to those channels which are imperceptible. Heinrich von Staden, with May, translates as follows from Galen’s *On the causes of symptoms*: “The nerve which proceeds from the brain to the eye – which Herophilus and his followers in fact also call a *poros*, because its perforation alone [sc. unlike that of other

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312 May translates the sentence as follows: “Moreover, these nerves alone obviously contain perceptible channels.”

313 See, for example: O’Malley 1964: “It was, however, from Erasistratus that Galen accepted the belief that the nerves were hollow and that sensation and motion were produced by the passage of animal spirit through these hollow nerves.” Arikha 2007, 23: “For a very long time, up to the seventeenth century, nerves were believed to be hollow and to contain *pneuma*.” Finger and Piccolino 2011, 180: “Galen’s physiology can be confusing because it has both pneumatic and mechanical components. . . . Nevertheless, his version of the hollow nerve theory, with its emphasis on animal spirits, would dominate science and medicine for the next 1,500 years.” For the reception of this motif in contemporary scientific literature, see Bouton 1991, 19: “For Galen, the nerves are hollow tubes, as they were for Alcmaeon. For Galen, as for Herophilus, these nerves bring the muscles energy which they draw from the brain like water from a well.”

314 Siegel 1968, 193–94.

315 Cf. Solmsen 1961, 187, with regard to Herophilus (referring to Galen’s remarks in *On the causes of symptoms*, quoted below): “[Galen] does not say that Herophilus found ὄδοι [sc. paths] of the πνεῦμα only in the optic nerves but that here only were these ‘ways’ visible and clearly present (αἰσθηταί, σαφεῖς) and that here only was the perforation (lumen, τρῆμα) to be seen.” See also my discussion in part three, above.
nerves] is clearly visible – seems to me to exist as a pathway for sensory pneuma.”\(^{316}\) Elsewhere, however, von Staden seems to lean more toward ambiguity: “As regard sensory nerves that descend to the eyes from the brain, which Herophilus in fact also calls ‘passages’ (poroi) since they alone have clear perceptible paths [May: “only in them are the pathways for the pneuma clearly perceptible”] for the pneuma.”\(^{317}\)

Galen himself addresses this question in *On the opinions of Hippocrates and Plato* 7.4.

Following an extensive discussion of the optic nerves he writes as follows:

Is it the case, then, that just as some pneuma reaches the eyes through the optic nerve, so it is with all the other nerves also? Is there a path through each of them, invisible because of its small size? Or is this impossible in the case of the finest nerve fibres? We shall have to conceive of something encircling the passage as the body of the nerve, finer even than a spider’s web, so that it will itself be very quickly torn apart, and the poroi will be blocked at almost every moment. For these reasons I do not believe that there are poroi in all the nerves.\(^{318}\)

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\(^{316}\) Gal., *Caus. symp.* 1.2 (VII 88.17–89.1 K.) = Herophil. t. 85 von Staden: δοκεῖ δὲ μοι τὸ ἀπ’ ἐγκεφάλου καταφερόμενον ἐπὶ τὸν ὀφθαλμόν νεῦρον, ὅ δὴ καὶ πόρον ὀνομάζουσιν οἱ περὶ τὸν Ἡρόφιλον, ὅτι τούτῳ μόνον φανερὸν ἦστι τὸ τρήμα, πνεύματος ὑπάρχειν ὥστε σιδηρικόν. Trans. von Staden 1989. Johnston 2006, 207 provides a more ambiguous translation: “It seems to me with respect to the nerve which passes down to the eye from the brain, which in fact the followers of Herophilus term ‘channel’, that this alone is clearly an aperture, and is the path of the sensory pneuma.” But cf. von Staden 1989, 254: “It is not clear whether these texts concerning the optic nerve allow the generalization that, in Herophilus’ view, all sensory nerves contain pneuma.” Emphasis in the original. It is similarly unclear, from von Staden’s remarks, which are focused appropriately on Herophilus, whether he thinks that *Galen* thinks that “all sensory nerves contain pneuma.”


\(^{318}\) Gal., *PHP* 7.4.20.1–21.5: πότερον οὖν ὡσπερ ἐπὶ τοὺς ὀφθαλμοὺς ἀφικνεῖται τι πνεύμα διὰ τῶν ὑπτικῶν νεύρων, οὕτω καὶ κατὰ τὰλλα ἔχει σύμπαντα καὶ τις ὥστε ἔστι καθ’ ἐκατέστην αὐτῶν ἀόρατος ὑπὸ συμπρότητος ἢ τούτῳ ἀδύνατον ἐπὶ τῶν ἐν τοῖς νεύροις λεπτοτάτων ὑπάρχειν ἰνόν; δεήσει γὰρ ἡμᾶς ἐπινοήσαι τι τῷ πόρῳ περικειμένον ἐν κύκλῳ, τὸ τῶν νεύρων σῶμα, λεπτότερον καὶ τῶν ἀραχνῶν, ὥστε αὐτὸ τε διασπασθήσεται τάχιστα καὶ ὁ πόρος ἐμφασικῶς ἀφικνεῖται μόνον οὐ
Yet, while Galen denies here that “all the nerves” contain “pathways,” he does not provide a positive account of how the *pneuma* works upon the nerves. As Julius Rocca writes of Galen’s nervous doctrine: “The twin hallmarks of the rational soul for Galen are that it is responsible for sensation and voluntary motion. These are mediated *in some way* by the actions of psychic pneuma in the nerves.”

More confident than Rocca, Siegel extracts “three different doctrines of nerve conduction” from Galen’s treatise *On the opinions of Hippocrates of Hippocrates and Plato* 7.4.1–3, which Galen opens with the following question: “With regard to the ventricles of the brain, when they were emptied of pneuma the whole animal lost the power of sensation, and for that reason we said that the pneuma was useful for the sensations and motions of the parts; should we therefore similarly suppose that there is also a certain pneuma in each nerve?" According to Siegel, either (1) pneuma is already contained in the substance of the nerve, and functions “by transmitting a mechanical signal,” that is, a “material or mechanical impulse,” or (2) pneuma flows into the nerve from the brain. That is, in Galen’s words:

Should we suppose that this pneuma is something local (ἐγχώριόν) and innate (σύμφυτον) to the nerves, and is struck by the pneuma that comes like a messengers (ἀγγέλου τινός) from the source, or rather that there no innate pneuma in the nerves, and that it flows in from the brain at that moment when we choose to move the limb?"
Neither option, Siegel remarks, can “agree with the basic principles of Galen’s doctrines of respiration and metabolism”; he highlights, therefore, a third option (3): “nerve stimulation modifies a certain quality which is present in the peripheral nerves.”

Galen describes this as “the qualitative change of continuous parts, a view that seems to me to be hinted at by those who say that the flow is by virtue of some power without substance.” This he compares to the light of the sun, which “reaches every part of the air, while the actual substance of the sun remains in its place.” Whereas Siegel appears confident that only the third option is compatible with Galen’s general physiology, Galen himself expresses a measure of ambivalence: “I have no ready answer,” he writes. Indeed, it is not possible to state readily whether (2) power flows in this way from the brain to the limbs through the nerves, or if (1) the substance of the *pneuma* reaches all the way to the perceiving and moving members, or if rather (3) it falls upon the nerves for a certain distance so as to alter them violently, and the alteration is then transmitted as far as the moving members.

All in all, then, it seems that Galen insists that the finest nerves, at least, lack a hollow passage for the *pneuma*, which the optic nerves certainly contain. The question then arises of how

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Siegel 1968, 194.

323 Gal., *PHP* 7.4.1.13–4: ἢ κατὰ ποιότητα τῶν συνεχῶν ἀλλοίωσις, ὅπερ αἰνίττεθαι μοι δοκοῦσιν οἱ κατὰ δύναμιν ἐπιρρεῖν τινα χωρίς οὐσίας φάσκοντες.

324 Gal., *PHP* 7.4.2, esp. 3–6: καθάπερ ὅταν ἐπὶ τοῦ περιέχοντος ἀέρος ἐκ τῆς ἡλιακῆς αὐγῆς ὀρμηθεῖσα τις ποιότητας εἰς ἄπαν αὐτοῦ μέρος ἀφικνήται διάδοσις, αὐτῆς τῆς οὐσίας τοῦ ἥλιου μενουσῆς κατὰ χόραν. Cf. Gal., *PHP* 7.4.24.1–25.1: ἐλέχθη γὰρ ὅτι τοῦτο δὴ τὸ καλοῦμενον ὑπὸ τῶν πολλῶν διάδοσις δυνάμεως ἀλλοιώσεως ἐστὶ μετάδοσις, οὐ καὶ κατὰ τὸν ἀέρα γίγνεται πρὸς τῆς ἡλιακῆς αὐγῆς. “For it was stated that what people call a transmission of power is a transfer of qualitative change, such as occurs also in the air by the agency of sunlight.”

325 Gal., *PHP* 7.4.1.10–1: ἐγὼ μὲν οὐκ ἔχω προχείρως ἀποφήμαται.

326 Gal., *PHP* 7.4.3.1–4.1: οὕκ οὖν τὸ προχείρως ἀποφήμασθαι πότερον οὕτως ἐξ ἐγκεφάλου δύναμις ἐπιρρεῖ τοῖς μέλεσι διὰ νεύρων, ἢ τῆς τῶν πνεύματος οὐσίας παραγινομένης ἄχρι τῶν αἰσθηνομένων καὶ κινουμένων μορίων, ἢ μέχρι τινὸς ἐμπιπτούσης τοῖς νεύροις ὡς ἀλλοίωσις σφοδρᾶς αὐτά, κἂπειθ’ οὕτως τῆς ἀλλοιώσεως ἄχρι τῶν κινουμένων μελῶν διαδιδομένης.
pneuma might act through solid nerves, and the preferred answer seems to be that the sensory or motor power is transferred through transformation of the substance of the nerve, just as sunlight transforms the external air with its light. Nonetheless, Galen remains ambivalent. This is perhaps because he himself had not worked out in full the precise mechanism whereby pneuma, nerves, and brain conspire to produce the sensorimotor activities of the soul.\textsuperscript{328}

Nor was the problem resolved some two hundred years later, when the Greco-Syrian bishop Nemesius of Emesa (fl. c. 390 CE) wrote his carefully researched philosophical treatise \textit{On the nature of the human being}.\textsuperscript{329} After describing how each of the different sensory nerves is rooted in the brain, Nemesius goes on to ask, “So how can touch belong to the whole body, when we say that sensations are from the frontal cavities of the brain?”\textsuperscript{330} His answer is that “the sensation of touch supervenes” when the nerves descend.\textsuperscript{331} Yet, this raises a second problem: “Since often, when our foot hits a thorn, the hairs on our head immediately shiver, some have thought that the affection, or the sensation of the affection, is sent upwards to the brain. Yet if

\textsuperscript{328} Rocca 2003, 225: “Yet although Galen has demonstrated that an agency he calls ‘psychic pneuma’ is present within the ventricles of the brain, Galen is not so certain of its exact role in sensation and motion.” Cf. ibid., 233fn109, where Rocca points to one passage in Galen’s treatise \textit{On fullness} where pneuma is said to flow in the motor nerves (Gal., \textit{Plenit.} [VII 534.11–7 K.]), and to another where this is denied (Gal., \textit{Plenit.} [VII 536.5–13 K.]). See also Gal., \textit{Mot. musc.} (IV 371 K.), which suggests that it is the faculty (δύναμις), and not the pneuma that travels through the nerve. (Note the similarity between this and Galen’s theory of the pulse, which he considered to be transmitted as a \textit{dynamis} through the arterial wall, as described in Boyal 2007, 216).

\textsuperscript{329} I use the translation of Sharples and van der Eijk 2008 throughout, except where otherwise noted.

\textsuperscript{330} Nem., \textit{Nat. hom.} 8, 64.1–2: πῶς οὖν παντὸς ἐστὶ τοῦ σώματος ἡ ἀφὴ, εἰπέρ ἀπὸ τῶν προσθίων. κοιλίων τοῦ ἐγκεφάλου λέγομεν εἰναὶ τὰς αἰσθήσεις;

\textsuperscript{331} Nem., \textit{Nat. hom.} 8, 64.2–4: ἢ ὅτι νεύρων καταπεμπομένων ἐξ ἐγκεφάλου καὶ διασπειρομένων εἰς πᾶν μόριον τοῦ σώματος ἡ τῆς ἀφῆς αἰσθήσεις προσγίνεται. On the choice of “supervenes” to translate προσγίνεται, see Sharples and van der Eijk 2008: 112fn551. On supervenience in contemporary studies of the mind/body relationship, see Davidson 1970, discussed in Kim 1993, 135. According to Davidson, “mental characteristics are in some sense dependent, or supervenient, on physical characteristics” (Davidson 1970, 88).
this account were true, it would not be the part that is cut that suffers pain, but the brain.”

Given that the brain is obviously not the part that experiences pain when one steps upon a thorn, Nemesius suggests that “it is therefore better to say that the nerve is the brain; for it is a part of the brain which has psychic pneuma all throughout itself, just as iron that has been heated in the fire contains the fire.”

It is clear that Nemesius assumes that the nerve is filled with psychic pneuma. However, the analogy he draws between the pneuma-soaked nerve and the heated iron echoes Galen’s account of the sun’s transformation of the external air, which was employed to support option (1), wherein the nerves contain pneuma that is “local and innate,” rather than (2), which suggests that pneuma flows from the brain into the nerves. Nemesis, indeed, goes further than Galen in naming the implications of this model. The nerves are not merely extensions of brain substance; rather, “the nerve is the brain” (τὸ νεῦρον ἐγκέφαλός ἐστι). The iron becomes fire; the air becomes the sun.

At stake in these debates about how precisely pneuma works upon and within the nerves (apart, of course, from the inevitable comparison between Galenic and biomedical neurophysiology) is the question of whether pneuma and psychê are in fact fungible concepts.

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332 Nem., Nat. hom. 8, 64.4–9: ἐπειδὴ δὲ πολλάκις ὑπ’ ἀκάνθης πληγέντες τὸν πόδα τῆς κεφαλῆς εὐθέως τὰς τρίχας φρίττομεν, φήμησάν τινες τὸ πάθος ἢ τὴν αἴσθησιν τοῦ πάθους εἰς τὸν ἐγκέφαλον ἀναπέμπεσθαι καὶ οὕτως αἰσθάνεσθαι. ἀλλ’ εἶπερ ἢν ἀληθής οὕτος ὁ λόγος, οὐκ ἂν ἦλεγε τὸ τεμνόμενον μόριον, ἀλλ’ ὁ ἐγκέφαλος.

333 Nem., Nat. hom. 8, 64.9–11: βέλτιον οὖν λέγειν ὅτι τὸ νεῦρον ἐγκέφαλός ἐστι· καὶ γὰρ μοιρὰ τίς ἐστιν ἐγκεφάλου διὰ παντὸς ἑαυτοῦ τὸ ψυχικὸν ἔχον πνεῦμα, ὡς ὁ πεπυρακτωμένος σίδηρος ἔχει τὸ πῦρ.

334 Note that, instead of “light,” Nemesius adopts as his transmitted quality “heat,” which is one of the four fundamental qualities out of which all bodies are constituted (hot, cold, wet, dry). He is therefore emphasising the corporeal aspect of pneuma, instead of the incorporeal quality of light.
within the Galenic framework, as they are within Stoicism.\textsuperscript{335} If \textit{pneuma} pervades the body and delivers “psychic” functionality to all parts of the body, what need is there, after all, for an abstracted, immaterial soul?\textsuperscript{336}

Is \textit{pneuma} identical with, or only the instrument of the soul? This is a question of some interest to Galen, who tackles it in the same book as he investigates the question of whether \textit{pneuma} travels within the nerves.\textsuperscript{337} Based on the experiment wherein the anatomist compresses and incises the ventricles of the brain to allow the \textit{pneuma} to escape, Galen suggests the following conclusions:

\textsuperscript{335} Hankinson 2006, 235 makes it clear that Galen differs from the Stoics in this respect: “Thus, even if the term functions only as a sort of place-holder, \textit{pneuma} plays a significant role in [Galen’s] account of the soul. But he explicitly refuses to go along with the Stoic claim that the pneuma actually \textit{is} the soul.” For critique of the ancient nervous system as inferior to the modern, see, e.g., Siegel 1968, 189–90, esp. 190: “[Galen’s erroneous concept of a cerebral pneuma delayed both the correct understanding of the problems of respiration and of the function of the nervous system.” This sentiment is echoed in Finger 2001, 46: “[Galen] correctly guessed that the sympathetic nervous system works as a whole, but was less accurate when it came to its function. ... did Galen have a clue about how the brain actually functions, or did he propose just another fanciful theory?” Cf. the apologetic note struck by Annas 1992, 24, in her description of Hellenistic theories of the nervous system: “The idea that the nervous system works by something like hot air sounds so immediately ludicrous to us that it is worth making the point that what counts as an illuminating model for physical or psychological processes, rather than as a misleading or comic one, may well depend on factors external to the development of science” (in this case, as Annas goes on to explain “the prestige of advancements in empirical medicine”). On the fungibility of \textit{psuchê} and \textit{pneuma} in Stoicism, see part three, above, and also Annas 1992, 37 (“soul is \textit{pneuma}”); 67–8 (soul \textit{pneuma} is at a higher degree of tension, and therefore “physically more cohesive” than, for example, sensory \textit{pneuma}); 70 (quoting DL 7.52: “Perception (\textit{aisthêsis}) is said by the Stoics to be (1) the \textit{pneuma} extending (\textit{dièkon}) to the senses (\textit{aisthêseis}), (2) the apprehension through them, (3) the makeup of the sense organs, in which some people are defective.” For the Stoic account of perception in general, see ibid., 71–85.

\textsuperscript{336} Long 1982, 43 describes this as a question that arises out of Stoic materialism: “So why not say that the soul is a part of the flesh and bones body—that sensation generally, and psychic attributes specifically, are nothing more than functions of the heart or the brain? The Stoics will not do this. They are willing to say that the soul is a physical part of the animal. But it is not a part or an organ of the flesh and bones body. The soul is a substance in its own right which permeates the flesh and bones body, and which leaves that body at death.” Chapter two explores this question in more detail.

\textsuperscript{337} Gal., \textit{PHP} 7.3.
If the soul is incorporeal, the pneuma is, so to speak, its first home; but if the soul is corporeal, then this very thing [sc. the pneuma] is the soul. But since, once the ventricles have been closed up, the animal presently regains sensation and motion, it is no longer possible to accept either alternative. It is better, then, to assume that the soul dwells in the actual body of the brain, whatever its substance may be ... and that the pneuma is the soul’s first instrument for all the sensations of the animal and for its voluntary motions as well; and therefore, when the pneuma has escaped, and until it is collected again, it does not deprive the animal of its life, but rather renders it incapable of sensation or motion. Yet, if the pneuma were itself the substance of the soul, the animal would immediately die along with the escape of the pneuma.\footnote{\textsuperscript{338} Gal., \textit{PHP} 7.3.19.3–22: \textit{εἰ μὲν ἀσώματος ἔστιν ἡ ψυχή, τὸ πρῶτον αὐτῆς ὑπάρχειν, ὡς ἄν εἶποι τις, οἰκητήριον, εἰ δὲ σῶμα, τούτῳ αὐτῷ [πνεῦμα] τὴν ψυχὴν εἶναι. ἀλλὰ ὅταν γε συναρθείσαιν τῶν κοιλίων ὑλίγνου ὑστερον αὕθες αἰσθάνηται καὶ κινήται τὸ ἄνθρωπον, οὐκέτα \textit{<οὐδέτερον>} ὁ τῶν φάναι τῶν εἰρημένων ὑπάρχειν τούτῳ τὸ πνεῦμα. βέλτιον οὖν ὑπολαβεῖν ἐν αὐτῷ μὲν τῷ σώματι τοῦ ἐγκεφάλου τὴν ψυχὴν οἰκεῖν, ἣτις ποτ᾽ ἂν ἦν κατὰ τὴν οὐσίαν ... τὸ πρῶτον δ᾽ αὐτῆς ὀργανῶν εἰς τὰς αἰσθήσεις ἀπάσας τοῦ ὅμοιον καὶ προσφέτις τὰς καθ᾽ ὀρμὴν κινήσεις τούτῳ εἰναι τὸ πνεῦμα, διό και κενοθεν, ἀρχος ἄν αὕθες ἀθροισθῇ, τὴν μὲν ζωὴν οὐκ ἀφαιρεῖσθαι τὸ ἄνθρωπον, άναίσθησθιν δὲ καὶ ἀκίνητον ἐργάζεσθαι. καίτει γε, εἴπερ ἦν αὐτῷ ἢ τῆς ψυχῆς οὐσία, συνδιερθέετ᾽ ἂν αὐτῷ κενομένῳ παρασχήμα τὸ ἄνθρωπον. Translation adapted from \textsc{de Lacy} 1978.}

That is to say, the loss of pneuma inhibits psychic function, but does not mean the loss of soul.

The continuous presence of pneuma within the cerebral ventricles is not necessary for animal life, although it is required for the activities proper to that life.

This distinction between the pneuma and the soul is important for comprehending the limits of Galen’s materialism.\footnote{339 Note that Siegel 1968 renames \textit{“psychic pneuma”} as \textit{“cerebral pneuma,”} on the grounds that “Galen supposed that it activates the brain,” adding that, “it is not to be identified with the soul, as the term [sc. psychic pneuma] might suggest.” Cf. the broader synthesis of Finger 2001, 47, which relies more heavily upon later accounts: \textit{“In turn, some of the transformed spirits from the heart go to the brain, where they are converted into pneumata psychikon, or ‘animal spirits’. These are the spirits of mind.”}} Psychic pneuma and rational soul are “linked,” but “discrete,” to use the terms of Julius Rocca.\footnote{340 Rocca 2003, 196: \textit{“For Galen, the rational soul and psychic pneuma are two discrete entities that are linked in that the former manifests its activities through the latter.”}} By maintaining a distinction between pneuma and soul,
Galen continues to uphold his Platonist credentials, which provide a kind of philosophical authority for his claim that the hêgemonikon (or logistikon) is located in the brain.\footnote{Rocca 2003, 196–98 argues that a similar intent to avoid equating pneuma with soul motivates Galen’s suggestion that the soul dwells not in the ventricles themselves, but “in the actual body of the brain. Indeed, Rocca suggests that pneuma and psuchê cannot even occupy the same physical space: “Since the rational part of the soul is the hegemonikon, and since that is located in the brain, and as the pneuma in the ventricles is not the soul, then the soul resides somewhere else in the brain” (197).}

iii. The Anatomy and Functions of the Brain

In this final sub-section, our focus shifts from the nervous system to the brain itself, and in particular to its ventricles. This is not the place for a detailed topography of the Galenic brain in all of its anatomical detail.\footnote{For this, consult the magisterial work of Rocca 2003, especially part two.} At issue, rather, are the ways in which Galen establishes a broad understanding of how the brain functions physiologically, and how its physiological processes support its psychological end. As was the case for Aristotle and, to a certain extent, Plato, Galen’s investment in teleological thinking—the premise that all parts of the body have the best possible form for their purpose or function—lends salience to anatomical structures as participants in the debate about how the brain functions. What we shall find emphasised above all in this interconnection of anatomy and function is the importance of managing the fluids that pass through chambers and passageways of the brain.
a) Architecture and Aqueducts

“Galen,” as Julius Rocca writes in his account of the architecture of the ventricles, “draws his analogies from structures and systems that deal with the containment or distribution of fluids.”

Consider this example from book eight of the treatise *On the usefulness of the parts*:

The portion of brain above the shared cavity, is rounded like the roof of a house to give the appearance of a hollow sphere, and seems to have been named not unreasonably *kamarion* (“little vault”) and “archlike” because it is the custom for architects to name such parts of buildings “vaults” and “arches.” ... The usefulness of that vault-shaped body should be assumed to be no different from that of actual vaults in buildings. Indeed, just as those are more suitable than any other shape for carrying the load resting upon them, so too this vault-shaped body holds up without distress all that portion of the brain that lies above it; for a rounded body is everywhere most similar to itself, hence of all shapes the most resistant to injury, and yet the most capacious of all the shapes having an equal perimeter. This is no small advantage for vessels, canals, ventricles, and everything that is formed to receive some substance.

From this passage we might draw two central points: (1) The first is that Galen is familiar with some basic terminology and axioms of contemporary Roman architecture, and that he applies these as a hermeneutic framework to help his reader both to envision how the inside of the brain

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343 Rocca 2003, 100, continuing as follows: “The analogy of the outflow tracts of the confluence of the venous sinuses to those which supply a garden bed is instructive. It is as effective as the reference to the treading floor of a winery in conveying the manner in which the meningeal folds direct the passage of venous blood.”

344 Gal., *UP* 8.11 (III 667.7–12, 668.6–17 K.): τὸ δ’ ὑπὲρ τὴν κοινὴν κοιλότητα μόριον ἐγκεφάλου, καθάπερ οίκιας τις ὄροφος, εἰς κούλης σφαιράς ἐπιφάνειαν περιαγόμενον, οὔκ ἂν ἄλογος δόξειν ὀνομάσθαι καμάριν τε καὶ ψαλιδειδές, ὧτι καὶ τὰ τοιαῦτα τῶν οἰκοδομιμάτων ἔθος ἐστὶ τοῖς ἀρχιτεκτονικοῖς καμάρας τε καὶ ψαλίδας ὀνομάζειν. ... τὴν δὴ τοῦ ψαλιδοειδοῦς ἐκείνου σώματος χρείαν οὐκ ἄλλην ταύτα ἔπειτα τῆς τῶν ψαλίδων αὐτῶν τῶν ἐν τοῖς οἰκοδομιμασίν ὑπολήπτειν. ὡς γὰρ κάκειναι βαστάζειν τὸ ἑπικείμενον ἀρχής ἐπιτηδειότεραι παντὸς ἄλλου σχῆματος, οὔτω καὶ τούτῳ τὴν ὑπερκειμένην ἐγκεφάλου μοίραν ἀπαίσαν ἄλυπως ὁχήσ. πάντη τε γὰρ ὁμοιότατον ἐμαυτῷ τὸ κυκλοτερές ἐστὶ καὶ διὰ τοῦτο πάντων σχημάτων διατεθέσατον, καὶ μέντοι καὶ μεγίστον ἅπαντων τῶν ἑσύν ἐχόντων περίμετρον. ἐστὶ δ’ οὖδε τούτῳ συμκρόν ἄγαθὸν ἀγγειος καὶ πόρωις καὶ κούλιας καὶ πάσην, ὅσων ἡ γένεσις ἑνεκα τού δέξασθαι τινας ὀύσιας. On this passage, see Rocca 2003, 109–12.
is structured, and also to grasp the teleological principle that motivates his account. The brain is a feat of engineering, within which each part is constructed to provide appropriate support to the whole. (2) The second point to observe is that, while the teleological explanation for these “vault-shaped” and “archlike” parts (the fornix and the corpus callosum) is to support the parts above (thus, they are compared to “the roof of a house”), the end-point of the explanation itself is the similarly rounded “vessels, canals, [and] ventricles,” which have their spherical or rounded design for the purpose of receiving and transmitting some kind of substance, that is, either phlegmatic residues and mucus, vapours, or psychic pneumā. The architecture of the brain is fashioned around the central function of the brain, which is the efficient redistribution of vapours and fluids. Indeed, the third ventricle—which, in later accounts, becomes reinterpreted as the site of memory or of rational thought—operates primarily as a “passage between anterior and posterior ventricles,” that is, “a series of spaces which are ducts or passages” through which psychic pneumā might pass on its way from the anterior ventricles, where it is elaborated, to the spine.

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345 On the architectural principles behind the construction of vaults in Roman building projects, see Lancaster 2005.
346 Rocca 2003, 117–18: “Galen’s ventricular system is a continuous series of symmetrical chambers linked by passages or canals, and communicating with the brain substance, the spinal cord and the cranial nerves.” Cf. Rocca 2003, 135: “The physiology of the middle or third ventricle is twofold. First, through its communication with the anterior ventricles via the interventricular foramina, it allows psychic pneuma to pass from there to the channel between [the] third and fourth ventricles. Second, by using its complex series of ducts or passages which lead ultimately to the pharynx via the base of the brain, it is responsible for the removal of the heavier waste-products of nutrition.”
347 Rocca 2003, 136–37. See Gal., UP 8.11 (III 666.14–6 K.): εἰςὶ δ᾿ οἱ σύντρησιν μὲν αὐτὸ δὴ τοῦτο καλοῦσι τῶν δύο κοιλιῶν, ἐτέραν δὲ τινὰ χρήμα νομίζειν οὐκ ἐπιτρέπουσιν. “But there are those, indeed, who call it a connecting passage between the two cavities [sc. the anterior and posterior ventricles], and do not allow that it is necessary to consider it it as another [cavity].” On the anterior ventricles, see Rocca 2003, 135: “For Galen, the anterior ventricles encompass four functions: they elaborate psychic pneumā, they are the instruments of olfaction, they discharge
This function of the brain as a site for redistributing bodily fluids should not by now be surprising. As we saw in parts one and two, the brain was early on envisioned as a central node for open channels or ducts (*poroi*), and later as the source of the nerves (*neura*) through which, variously according to author, air, phlegm, vapours, and *pneuma* might pass. The brain, according to the Hippocratic text *On glands*, was one of the largest of bodily organs responsible for managing excess fluid. Like a sponge, it mopped up the phlegm produced through, for example, eating too much cheese, and discharged it through the nose, mouth, and eyes, or, more problematically, back into the central regions of the body. In general, Hippocratic authors understood the brain to be a source of phlegmatic flux, which was responsible for illnesses such as pneumonia and epilepsy. Within Aristotle’s biological schema, the function of the brain as a container for, and a source of, bodily fluids gained a more fundamental purpose as the mitigation of heat generated by the heart. Like the chilled atmosphere above, the brain condensed digestive vapours into fluids that cooled the body as they streamed back down.

Galen’s articulation of the brain as a system of reservoirs and channels, arches and vaults, rearranges earlier understandings of the brain as a site for the management of bodily fluids to focus above all upon the channelling of the psychic *pneuma*.348 This is not to say that the internal plumbing of the brain was not oriented toward draining it of phlegmatic residues: To the contrary, Galen makes it very clear in book nine of *On the usefulness of the parts* that this was another important purpose of certain cerebral structures:

The cavity which admits the *poroi*, and which some call a “vat” (*πύελον*) on account of its shape, others a “funnel” (*χοάνην*) on account of its function, has the function, with residues, and [they] ensure the passage of psychic pneuma to the eye via the optic tract.” On the fourth ventricle and its connection to the spine, see Rocca 2003, 160–65.

348 Rocca 2003, 119: “Galen stresses the inter-communicability of the ventricles, an absolute necessity for the passage of his physiological agent of the nerves, psychic pneuma.”
regard to its upper parts, of some kind of receptacle, while with regard to its lower parts, just as its name suggests, it mimics a funnel. For it is hollowed out by a perceptible poros leading downward as far as the cavity within the gland.  

The function of this structure, Galen explains, is to funnel and to filter the “residues” as they drain out of the brain. In a sense, then, Galen continues to work with—indeed, perhaps cannot avoid—the traditional presentation of the brain as a site for the absorption and drainage of excess bodily fluids. Yet, for Galen, the drainage of the brain is for the sake of the brain, that is, to ensure its continued operation as the primary instrument of soul.

In addition to this shift, Galen also transforms the analogical frame from the natural world of sponges, fire, and precipitation to the architecture and artifice which flourished in imperial Rome. The movement of fluids within the brain is not so much enabled by natural forces such as evaporation and condensation, as engineered through the construction of an aqueduct, cisterns, and pipes. Even the popular Platonist conception of the brain as an acropolis or a palace is called into question. The architectural structure of the brain is not so much the palatial complex that the North African Christian author Lactantius (c. 240–320 CE) would imagine some decades later.

Cerebral anatomy was imagined not as a royal palace, but

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349 Gal., UP 9.2 (III 694.6–12 K.): ἡ μὲν ύποδεχομένη τοὺς πόρους κοιλότης, ἢν οἱ μὲν ἀπὸ τοῦ σχήματος πύελον, οἱ δ’ ἀπὸ τῆς χρείας χοάνην ὑπομάζουσιν, ἐκ μὲν τὸν ἄνω μερός οίνον δεξαμενής τινος ἐπέχει χρείαν· ἐκ δὲ τῶν κάτω, καθάπερ αὐτὸ τούνομα ἐνδείκνυται, χοάνην μεμίπηται· διατέτηται γὰρ εἰς τὸ κάταντες αἰσθητὸ πόρῳ μέχρι τῆς κατὰ τὸν ἁδένα κοιλίας.  

350 We shall see similar concern with the moisture-content of the brain as a factor in its ability to carry out its cognitive and sensorimotor functions in chapter three, below.  

351 The association between architecture and the human body was by no means unique to Galen. See McEwen 2003 for a detailed examination of the writings of the famous Roman architect Vitruvius through the lens of the architecture/body analogy. For artifice and spectacle in Roman engineering projects, see especially Brandon, Hohlfelder, Jackson, and Oleson 2014, which focuses on construction at sea.  

352 For the technology of water distribution in ancient Rome, see Taylor 2000.  

353 See part four, above.  

354 See chapter two.
as the plumbing beneath. Yet, Galen is not content to envision the brain merely as a network of pipes or a sponge. This becomes clear in his discussion of two aspects of cerebral plumbing: First, the evacuation of phlegmatic residues, and, second the function of the pineal gland.

a) Evacuation of Residues: The Brain is Not a Sponge

While the brain itself does contain channels and passageways from the drainage of the residues which gather within its cavities, the work of the brain is not to absorb and redistribute the residues for the rest of the body, but rather to channel the psychic *pneuma* toward the nerves and the spinal cord. The absorptive function assigned to the brain in earlier texts is reassigned to the structure within the skull. It is not, as we shall see, the brain that resembles a sponge, but rather the bones by which it is surrounded. This requires Galen to grapple with the question of quite why, or for what *telos*, the skull, which is obviously not a gland, must have spongy qualities.\(^{355}\)

In book eight, where Galen dwells for some time on the ethmoid ("colander-like") bones in front of the cerebral membranes, which filter residues from the brain as they drain into the olfactory passages. The particular structure of these bones, which Galen argues are not "colander-like" at all, but rather "sponge-like" (σπογγοειδής) enable the slow filtration of residues, and also protect the brain from the outside air.\(^{356}\) Nevertheless,

\(^{355}\) Cf. Rocca 2003, 146: “given Galen’s teleological standpoint, every structure of the body has a prescribed function.”

\(^{356}\) Gal., *UP* 8.7 (III 651.20–652.5 K.): Άλλα τὰ προκείμενα τῶν μηνίγγων ὅστα ταῦτα τὰ πολύτρητα καὶ σηραγγώδη, τὰ καλούμενα πρὸς τῶν ἀνατομικῶν ἡμοειδῆ, τῆς τοιαύτης βλάβης ὀλεξήματα γέγονε. βέλτιον δὲ ἦν οὐκ ἡμοειδῆ καλεῖν αὐτά μᾶλλον περ ἄ σπογγειδῆ, καθάπερ Ἰπποκράτης εἰκάζε. ποικίλα γοῦν ἔστι ταῖς καταρθέσεις, ὀσπέρ ἁ σπογγιαί, καὶ οὐκ εὐθύτρητα, καθάπερ οἱ ἠθμοί. “But these bones lying in front of the cerebral membranes, which are perforated with many holes and are sponge-like in appearance (σηραγγώδη), and which are called ‘ethmoid’ by anatomists, came about as a protection against such injury [sc. injury of the brain]. But it would have been better to have called them not ‘ethmoid’, but rather ‘spongoid’
the primary function of the passageways from the brain to the nostrils, for the sake of which above all they were made, is not the excretion of residues; rather, this is a supplementary support for the brain when it is in a poor condition. Prior to the evacuation of residues, there is discernment of odours; and even more important than this, and indeed necessary for life itself, is the intake of air into the brain.\textsuperscript{357}

This is striking. Galen wishes his reader to realise that, while the “excretion of residues” might be necessary for the health of the animal (indeed, at the opening of book nine, he identifies this as one of the foremost concerns of “nature”), the spongy quality of the ethmoid bones is designed first and foremost to supply the brain with pneuma, so that it can continue to animate the living animal.\textsuperscript{358} The management of other fluids is subsidiary.

Second, Galen considers ventilation: “And it might seem to someone that the skull was made “spongy” or “porous” (σηραγγώδες) for no reason, since the sutures, because of their own great number and size do not require help from anything else for effecting transpiration. Here, therefore, it is necessary to demonstrate that it is necessary on account of a different function.”\textsuperscript{359} The sponge-like cavities in the skull bone exist not to allow for a free airflow out of the brain,

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(σπογγοειδή), as in the comparison that Hippocrates made. For they are dotted with many perforations, just like sponges, but their perforations are not straight, as in colanders.”
\end{flushright}

\textsuperscript{357} Gal., \textit{UP} 8.6 (III 681.10–6 K.): ὃςθ’ ἡ πρώτη χρεία τῶν εἰς τὰς ῥίνας ἐγκεφάλου συντρήσεων, ἢς ἕνεκα μάλιστα γεγόνασιν, οὐχ ἢ τὸν περιττώματον ἐστίν ἐκκρίσις, ἀλλ’ αὐτὴ μὲν ἐξ ἐπιμέτρου κακοπαραγούντος ἐγκεφάλου βοήθεια, προτέρα δ’ αὐτῆς ἢ τῶν ὀσμῶν διάγνωσις, καὶ ταύτης ἐτὶ πρεσβυτέρα καὶ πρὸς αὐτὸ γε τὸ ἐξ ναγκαία ἢ εἰς ἐγκέφαλον εἰσπνοή.

\textsuperscript{358} Gal., \textit{UP} 9.1 (III 684.7–685.3 K.). ἕν δὲ τι τῆς φύσεως καὶ τοῦτ’ ἐργον ἢν ἐν τοῖς μάλιστα διεσπουδασμένον, ἐκκαθαίρειν τὰ περιττώματα τῆς τροφῆς ἐξ ἄπαντων τοῦ σώματος τῶν μορίων, καὶ μᾶλλον εἰ κύρια καθάπερ ὁ ἐγκέφαλος ὑπάρχει. “But there is one among the functions of nature which is of particular concern, and that is the evacuation of the residues of nutriment from all the parts of the body, especially where the part is a governing one, such as the brain.”

\textsuperscript{359} Gal., \textit{UP} 9.2 (III 691.19–692.5 K.): καὶ μὴν δόξεις γ’ ἂν ἵσως τινὶ μάτην γεγονέναι σηραγγώδες τὸ κρανίον οὐδὲν δεομένων τῶν ραφῶν διά τι τὸ πλῆθος σφὸν αὐτὸν καὶ τὸ μέγεθος οὖδ’ ὑφ’ ἕνος ἄλλου βοηθεῖσθαι πρὸς διαπνοήν. ἐνταῦθ’ οὖν πάλιν τὸ καὶ δ’ ἄλλην τινὰ χρείαν τοιοῦτον αὐτὸ δεῖν γεγονέναι δεικνύειν ἀναγκαίον.
but rather to lighten the burden that the weight of the skull places upon the animal, while at the same time maintaining suitable protection for the brain:

A third way remained, therefore, that is, for [the skull] to be made neither slight nor dense, but thick, loose-textured, and sponge-like (σηραγγόδες). For in this way it was intended neither to be burdensome, nor to allow anything piercing through it a short path to the brain. It was made such, then, for these reasons as have just been named, and also somewhat for the sake of transpiration also.\footnote{Gal., UP 9.2 (III 692.14–5, 692.17–693.5 K.): λοιπὸν οὖν ἐτὶ τὸ τρίτον ἢν, μήτε λεπτὸν μήτε πυκνόν, ἀλλὰ παχὺ μὲν, ἄραιὼν δὲ καὶ σηραγγόδες ἐργάσασθαι. οὕτω γὰρ οὔτε βαρύνειν ἐμελλὲν οὔτε τὴν ἐπὶ τὸν ἐγκέφαλον ὁδὸν τῶν τιτρωσκόντων αὐτὸ βραχέιαν ἀπεργάσασθαι. καὶ δὴ τοιοῦτον γέγονε διὰ τε ταῦτα τὰ νῦν λεχθέντα καὶ τι καὶ τῆς διαπνοῆς ἔνεκα.}

The spongy quality of the skull is over determined. In opposition to the ethmoid bones, transpiration is its most insignificant, rather than its primary function. Above all, it is intended as a protection or support for the delicate organ within.

Galen’s teleological program provides a framework within which he can sideline earlier theories about brain substance and function by relegating them to second place, to a side effect of a structure that was designed for some other purpose—that is, the preservation of the cognitive and sensorimotor faculties for which the brain was responsible. Evacuation might happen through and around the brain, but it is not the purpose for which the organ was designed.

b) The Brain is Not a (Pineal) Gland

The third ventricle, as Rocca has made clear, functioned chiefly to channel 

\textit{pneuma} \n
into the fourth ventricle, which fed into the spinal column at the rear of the brain. Situated at the narrow point between the third ventricle and the fourth was a small object named after its pine-cone.
The pineal body, as Galen explained, “is glandular in substance,” but its precise function remained unclear. Some believed that it is situated at the entrance of the poros which channels the pneuma from the middle cavity to the cavity in the rear of the brain, and serves as some kind of guard or steward of the quantity that is sent on. According to this view, which Galen rejects, the pineal body regulates the passage of a bodily substance (pneuma)—perhaps by “moving together with the systole and diastole of the brain,” such that it might “open and close the poros by turns.” In this way, too, the pylorus (the opening of the stomach into the small intestines) is thought “to serve as a gland and to prevent nourishment being seized from the stomach into the small intestine before it has been concocted.”

Galen infers an alternative function for the pineal body, based on its position at the bifurcation of the “large vein” which feeds into the choroid plexuses of the anterior ventricles, carrying blood and pneuma up from the heart. The role of the pineal body is merely that of a structural support, Galen explains, referring to “other glands which prop up blood vessels as they split apart.” Its position is “exactly the same as that of such glands, with its peak firmly embedded at those parts of the blood vessel where it first splits apart … and extending out as far

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363 Gal., UP 8.14 (III 675.8–12 K.): ἐπὶ τῆς ἀρχῆς ἐστώτα τοῦ πόρου τοῦ διαπέμποντος ἀκ τῆς μέσης κοιλίας εἰς τήν ἐν τῇ παρεγκεφαλίδι τὸ πνεῦμα, φύλακα τίνα καὶ οίνον ταμίαν ὑπάρχειν τοῦ ποσοῦ τῆς ἐπικεφάλως.
364 Gal., UP 8.14 (III 676.14–7 K.): ταῖς ἐκείνους συστολαῖς καὶ διαστολαῖς συμμεταφερόμενον ἀκ τῆς ἐπικαίρου θέσεως ἀναγίγνονται τε καὶ κλείειν ἐν μέρει τοῦ πόρου. Galen posits this as a contrafactual hypothesis some lines later (see below, fn369).
as those parts are carried aloft.”367 The pineal body, it seems, plays no more than a supporting role.368

Unlike the pylorus, which can be considered part of the stomach itself, the pineal body is not a part of the brain.369 This, for Galen, is an important point. External to the ventricles, the pineal body could regulate the *poros* through which the psychic *pneuma* passes if, and only if, it were self-moving: “But since this gland is not at all a part of the brain, and hangs not from the parts within the ventricle, but from outside it, how would it be able to have such an effect on the

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368 Galen’s argument was perhaps garbled in translation, as the following brief comments by the eminent science writer Harold M. Schmeck suggest: “The 17th century philosopher Rene Descartes thought the pineal body was the seat of the rational soul. Some 1,400 years before him, the great Greek physician Galen believed it was a valve to regulate the flow of thoughts out of storage from the brain.” See Harold M. Schmeck, “As Scoffing Fades, Pineal Gland Gets Its Due,” in *The New York Times*, January 31st 1984 (Accessed 4/19/2016: http://www.nytimes.com/1984/01/31/science/as-scoffing-fades-pineal-gland-gets-its-due.html). Martensen 2004, 61 notes that, while “Descartes’s elevation of the pineal gland to a central role in brain and nerve activity was new,” it is not the case that “previous anatomists had ignored the pineal.” He observes, however, that “Galen usually discussed the pineal as an element of the ventricular system, not as a subject-in-itself,” and furthermore that “he did not express much interest in its possible function(s).” It bears pointing out that Galen in fact expresses significant interest in the function of the pineal body—more precisely, Galen expends effort arguing against those who do in fact give the pineal body “a central role in brain and nerve activity.” As in so much of ancient medicine, Galen’s polemic against rival authorities produces the “standard account” of ancient anatomical knowledge.

369 See the contrafactual at Gal., *UP* 8.14 (III 676.13–7 K.): εἰ μὲν γὰρ αὐτὸ γε τοῦ ἐγκεφάλου μόριον ἤν, ὥσπερ ὁ πυλωρός τῆς γαστρός, ἐνεδέχετ’ ἃν αὐτὸν ταῖς ἐκείνου συστολαῖς καὶ διαστολαῖς συμμεταφερόμενον ἐκ τῆς ἐπικάριου διάστασεως ἀνοιγόμεναι τε καὶ κλείειν ἐν μέρει τῶν πόρων. “For if it [sc. the pineal body] were a part of the brain, just as the pylorus is of the stomach, it would be able, on account of its fitting location, and moving together with the systole and diastole of the brain, to open and close the *poros* by turns.”

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port, unless it were self-moving (αὐτόκινητος)? Some might ask, Galen adds, why one ought not think of the pineal body as self-moving. Some might ask, Galen adds, why one ought not think of the pineal body as self-moving.

Why else than that in this case the gland would, because of its power and value, have been appointed for us as the brain, while the brain itself would be only a body divided by many poroi, like an instrument suitable for serving [another instrument] produced by nature to be capable of movement?

Here, Galen narrows in on self-movement as the definitive property of the enkephalos. We might be reminded here of the skindapsos, the nonsense word (if indeed it was intended as such) which Galen invokes as a place-holder for the brain, in making his argument that the enkephalos should be defined not by its location within the head, but by its anatomy and function: As the starting-point of the nerves, it is the source of sensation and motion within the body. What does it mean for Galen to add “self-moving” to the characteristics distinctive of the enkephalos?

The self-moving property of the brain is presumably the systole and diastole that Galen has already noted as the hypothetical cause of pineal motion, that is, the intake and transmission of air received through the olfactory channels and elaborated into psychic pneuma within the anterior ventricles. This movement is similar, indeed identical in name, to the movement of the heart and the blood vessels through which it works. We should not, then, imagine the “self-

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370 Gal., UP 8.14 (III 676.17–677.2 K): ἐπεὶ δ' οὐθ' ὅλος οὐδὲν ἔστιν ἐγκεφάλου μόριον ὁ ἄδην οὖτος οὐτ' ἐκ τῶν ἐνδόν μερῶν τῆς κοιλίας, ἀλλ' ἐξαθεὶν αὔτῇ προσήρχεται, πῶς ἂν δύναται τῇ κατὰ τοὺς πόρους διαπράττεσθαι μή αὐτόκινητος γε ὁ νόμος; καὶ τῇ κατεύθει, φησί τις ἴσως, αὐτόκινητος ὑπάρχειν αὐτόν;  
373 Boylan 2007, 209 draws a similar comparison between the brain and the heart, insofar as both “principal organs” are “delivery mechanisms.” On the pulse as prompted by a faculty (dunamis) of the heart, see ibid., 216, with reference to Gal., Puls. diff. 4.3 (VIII 723 K.). Galen wrote many works on the pulse, which he considered to be a natural faculty proper to the heart and its arteries.
moving” brain as an independent agent; it is, rather, an organ endowed with its own proper power, that of propelling the *pneuma* through its various cavities. At the same time, the word “self-moving” invokes Plato’s identification of the soul in his treatise *Phaedrus* as entirely immortal. For that which is eternally in motion is immortal; but that which moves another and is moved by another, when it ceases to move, ceases to live. Only the one which moves itself, since it does not leave itself, never ceases to move, and rather is the source and origin of movement for the others, insofar as they are moved.

Aristotle similarly, as we saw above, considers the soul to be the “unmoved mover” at the level of the animal, in contrast to the body, which is only ever moved by another body or by the soul.

The brain is obviously not “self-moving” in the sense that either Plato or Aristotle intends with reference to the soul. Nonetheless, it is not inappropriate for the brain to be associated with the soul in this way. In relation to the soul, the brain is “a body divided by many *poroi*”—a body empowered, it is true, by a certain kind of self-motion, but a body nonetheless. In relation to the rest of the body, meanwhile, the brain is a governing agent, emphatically not “only a body divided by many *poroi*,” being distinct from other parts in both its faculty of self-movement and the sensorimotor function that it imparts to the nerves. At the centre of both is the psychic

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Many of these have not been either edited or translated since the nineteenth-century work of Thomas Kühn (see the useful discussion in Berrey 2015, esp. 74). See Furley and Wilkie 1984 for a collection of texts/translations on the theme of respiration, including *On the usefulness of the pulse*. One of the most imaginative and insightful works on the pulse in Greek medicine in recent years has been Kuriyama 2002, 17–60.

374 For the idea that “self-movement” might operate along a spectrum, allowing automata to function as self-moving models for animal beings, see Berryman 2009, 201–05.

375 Pl., *Phdr.* 245c5–10: ψυχὴ πᾶσα ἀθάνατος, τὸ γὰρ ἀεικίνητον ἀθάνατον· τὸ δ’ ἄλλο κινοῦν καὶ ὑπ’ ἄλλου κινοῦμενον, παῦλαν ἔχον κινήσεως, παῦλαν ἔχει ζωῆς, μόνον δὴ τὸ αὐτὸ κινοῦν, ἄτε οὐκ ἀπολείπον ἑαυτὸ, οὕποτε λήγει κινοῦμενον, ἄλλα καὶ τοῖς ἄλλοις οὐκ ἀνατίθεται τὸ τοῦ πηγῆ καὶ ἀρχῆ κινήσεως.

376 See the discussion of Aristotle’s *On the movement of animals*, above.

377 On the “self-moving” soul in Plato’s *Phaedrus*, see Demos 1968 (self-moving soul as cosmic *archê* of motion); see also the line-by-line discussion in White 1993, 80–3.
pneuma, which is produced, regulated, and distributed from within the brain. If the distribution and regulation of pneuma were to be attributed to any other organ, then the enkephalos would be reduced to a supporting role, “merely a body divided by many poroi.” The glandular enkephalos of the Hippocratic and Aristotelian corpus has shrunk to a “little pine cone,” responsible no longer for the containment and release of fluids, but merely for the support of blood vessels bringing nourishment and supplies to the brain.

Conclusion

Galen’s anatomical works provide the most detailed material account of the brain that we have yet encountered. Galen also insists upon the importance of the nervous system for a proper understanding of cerebral function, sidelining earlier emphasis upon the brain as the central node in the circulation of bodily fluids; yet, the fluids and vapours of the body continue to break through. The brain, for all its celebrated status as the seat of the hégemonikon and the locus of thought, memory, imagination, and voluntary motion, is constructed around an elaborate drainage system. Like the Hippocratic author of On the sacred disease, Galen imagines the brain to be continually besieged by gathering fluids which must be funneled, drained, and disposed of, like land reclaimed from the swamps or the sea.378 This struggle to maintain the material integrity of the brain, at risk of damaging one’s capacity for reason, remains prominent in late antiquity, with regard both to theoretical concerns about the relationship between body and soul, and also to the practical pedagogy of self-care that we find in homilies and sermons. Attending to

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378 Pregill and Volkman 1999, 122–26; Rogers 2013, 179–216. I owe this analogy to Graham Swift’s Waterland, for which I must thank Brent Shaw.
and preserving the material condition (that is, in particular, the wetness or dryness) of one’s brain is fundamental to one’s mental wellbeing, and therefore to one’s spiritual health also.

**Conclusion**

We began this chapter with two epigraphs engaged with late antique and medieval reception of ancient medical science. In his study of the sixth-century Spanish writer Isidore of Seville and his medical learning, William Sharpe notes that the common claim that “natural science” of the medieval period “only explains the first chapter of Genesis” is somewhat true, if not without qualification. His author, meanwhile, quotes Augustine’s *Literal commentary on Genesis* as describing “three ‘ventricles of the brain’,” one in the front, responsible for perception, one at the back, responsible for movement, and one in the middle, which is the locus of memory.

The “natural science” presented within Augustine’s touchstone explanation of “the first chapter of Genesis” is clearly up to speed with a Galenic understanding of the brain as composed of a system of ventricles, which are each related, somehow, to sensorimotor and cognitive activities. Augustine even notes that perception operates from the front of the brain (where, as you will remember, Galen locates the sensory nerves), while movement progresses from the rear ventricle, closest to the spinal column (where Galen’s motor nerves are rooted). As we find elsewhere in Augustine’s own account, it is the *pneuma* (Lat. *spiritus*) that performs the work of the soul within these different ventricles. Galen’s account of the brain as more than merely “a

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379 Sharpe 1964, 9.
380 Isid., *Diff.* 2.51 (PL 83, 78B): *In capite autem, ut ait sanctus Augustinus, Tres tanquam ventriculi cerebri constituti sunt: unus anterior ad faciem, a quo sensus omnis; alter posterior ad cervicem, a quo motus omnis; tertius inter utrumque, in quo memoria vigere demonstratur.* Isidore is referring to a passage from Augustine’s *Literal commentary on Genesis*, book seven, which we shall discuss further in chapter two.
body divided by *poroi*” had spread deeply into popular discourse, and was disseminated further in the form of a theological commentary that informed readings of Genesis among communities perhaps less fluent in medical theory, such as the monastic communities and priests to whom Augustine’s writings were distributed, or the congregations to whom Augustine regularly preached. Through Augustine’s theological text, a medical model of the brain crossed over from the medical to the religious sphere, creating the possibility for listeners and readers to conceptualise their own brains within a Galenic framework.

Augustine’s report of the brain, as captured by Isidore, is of course not the entire picture for what transpired in fourth- and fifth-century Christian appropriations of the brain. As this chapter has sought to demonstrate, there was a rich history of theorisation that layered as interlocking strata in doxographic and revisionist accounts. From the early discussions of pre-Socratic philosophers such as Alcmaeon and Diogenes, who emphasised the connectedness of the brain to the external air via internal channels, to the Hippocratic and Aristotelian accounts of the brain as a phlegmatic organ, moist and cool, a means of balance and sometimes of destabilisation within the body, to the medical and philosophical texts which theorised the fundamental concepts of *pneuma*, *hégemonikon*, and *neura*, this chapter has highlighted the borrowing, the redefinition, and the recycling of terms and ideas. Late antique theologians were not innovators in the task of remodelling the structures of thought that framed the brain for intellectual and popular consumption. To the contrary, they fit neatly into a long and plural tradition.

While it is true that Christian authors were overwhelmingly informed by Galen’s ventricular model in their imaginings of the brain, they nonetheless continued to envision the brain as embedded in a broader physiological landscape, affected by vapours and transformed
through exposure to the sun. What does shift is the change which we saw already in Galen’s replumbing of the pipes and reservoirs within the brain: From the second century onward, concern with the physiology of the brain tends to focus on how engagement in the fluid economy of the body might endanger the brain’s central function. The governing role of the brain, after Galen, is no longer the management of bodily fluids and the body’s temperature, but rather the organisation of its nervous system, through participation in the economy of *pneuma*. The question of chapter two shall be this: To what extent is early Christian theorisation of the brain as the organ of the *hégemonikon* oriented along Galenic lines? In what ways are the new models that emerge the product of nascent theological and soteriological concerns?
II.

The Brain and the Body/Soul Relationship in Early Christian Thought

In the early fifth century, the Egyptian monk Isidore of Pelusium wrote a letter to a learned physician, Proeschius.¹ Barred from Pelusium, where he had previously been a priest, Isidore had retired to a monastery on the outskirts of his city, and kept up with the world chiefly through his epistolary network.² Most of his communicants were priests, bishops, lawyers (scholastikoi), and sophists, and many of his letters touch upon aspects of Christian scripture and the Christian life.³ The letter to Proeschius is not a total outlier in these respects, but it is unusual: Its addressee has medical expertise (Proeschius is called iatros, “physician”), and its subject—the soul—is treated in response to a work of non-Christian literature, that is, Galen’s *That the faculties of the soul follow the mixtures of the body* (*QAM*).⁴

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¹ *Isid. Pel., Ep.* 4.125 (PG 78, 1197C–1204A). The full address is “To Proeschius, learned physician” (Προεσχισκός σχολαστικώς ιατρός) or, as Temkin renders it, “To Proeschius Scholasticus, physician” (Temkin 1991, 205fn43). Note that *scholastikos* also means “lawyer.” The title given to the letter, “About the same thing” (περὶ τοῦ ἀκτητοῦ), clearly refers to the title of the previous letter, “About the soul” (περὶ τῆς ψυχῆς). The newest edition of Isidore’s letters is SC 454, which includes letters 1214–1700 only. The remainder of the letters (including 4.125 can be found in PG 78). There is no published English translation of this text.

² Isidore remains marginal in late antique studies, and I am grateful for my knowledge of his life upon a talk which Christopher Jones delivered at Princeton University on 25th March 2015, “Isidore of Pelusium, Sophist and Monk.” Jones is planning a further publication on Isidore and his letters. Most other work on Isidore is now somewhat dated, and focuses upon manuscript transmission (Turner 1904; Smith 1954).

³ This kind of network was not unusual for someone of Isidore’s social standing. Isidore was a trained rhetorician, a priest, and a monk. Individuals across all categories are known for their epistolary corpora. See, for example, the letters of the rhetorician Libanius (of which 886 have been translated: van Hoof 2014, Appendix E for a catalogue of translations), the bishops Gregory of Nyssa (Silvas 2007), Augustine (Rotelle 2001), and John Chrysostom (Forlin Patrucco 1996), and the Egyptian monks Barsanuphius and John (Chryssagis 2003) and Antony (Rubenson 1995).

⁴ *Gal., QAM* (IV 767.1–2 K.): Τὰς τοῦ σώματος κράσεσιν ἔπεσθαι τὰς δυνάμεις τῆς ψυχῆς. I use the translation of Singer 2013 except where otherwise indicated. The Latin title, *Quod animi mores corporis temperamenta sequantur*, is the source for the abbreviation *QAM*. I translate the
It appears that Proeschius has raised a question or posed a provocative claim regarding the authority of Galen in matters of the soul. It is difficult to know exactly what this question or claim was because Isidore does not respond directly to anything which Proeschius has said. Instead, he uses the letter as a platform for refuting the central thesis of Galen’s text, which is that the condition of psychic faculties such as thought and memory is dependent upon the body’s temperament—that is, the balance of bodily qualities (hot, cold, wet, and dry)—with the consequence that an independent (and immortal) entity “soul” might be considered logically unnecessary.

Even this refutation Isidore performs in circumlocutory and didactic fashion: First he divides non-Christians into two camps: First, there are the philosophers, such as Pythagoras (seventh century BCE) and Plato (fifth to fourth centuries BCE), who hold that the body is an “instrument” (ὄργανον) in “three dimensions,” whilst the soul is “incorporeal,” immortal, and

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5 For as much as we know about Proeschius, he might well be a straw man, invented by Isidore for the purpose of laying out his objections to Galen’s argument and proposing his own account. A less dramatic possibility is that the letter has been edited for publication, with only Proeschius’s title “doctor” retained as a motivating factor for the letter as a whole. In either case, what this suggests is that Isidore’s own question—whether soul is epiphenomenal to body or an independent entity—was thought (by Isidore at least) to be of popular interest, and also obscure enough to demand general clarification.

6 Gal., QAM 3 (IV 772.17–773.4 K.): Ὅτι μὲν οὖν τρία τῆς ψυχῆς ἔστιν εἶδος καὶ ὅτι ὁ Πλάτων βούλεται ταῦτα, δι’ έτέρων ἐπιδέδεικται, καθάπερ γε καὶ ὅτι τὸ μὲν ἐν ἠπτε, τὸ δ’ ἐν καρδίᾳ, τὸ δ’ ἐν ἐγκεφάλῳ καθίσταται· ὅτι δ’ ἐκ τούτων τῶν εἰδῶν τε καὶ μερόν τῆς ὀλίγης ψυχῆς τὸ λογιστικὸν ἀθάνατον ἔστι, Πλάτων μὲν φαίνει σεπεισιμένος, ἐγώ δ’ οὖθ’ ὡς ἐστιν οὖθ’ ὡς οὐκ ἔστιν ἐχω διατείνεσθαι πρὸς αὐτόν. “Now, the fact that there are three parts of the soul, and that this is Plato’s opinion, has been demonstrated elsewhere. So have their respective locations: the liver, the heart, and the brain. There is, however, a further belief, that of these three ‘forms’ or parts of the overall soul the rational is immortal; and of this Plato seems convinced. For my part, I am unable to make a confident assertion one way or the other.” Galen continues a few lines later as follows (IV 774.19–775.2 K.): εἰ μὲν οὖν τὸ λογιζόμενον εἴδος τῆς ψυχῆς ἔστι, θνητὸν ἔσται· <καὶ γὰρ> καὶ αὐτὸ κράσις τις ἐγκεφάλου. “If, then, the reasoning faculty is a form of the soul, it must be mortal: for it too will be a mixture, namely a mixture within the brain.”
indestructible. In opposition to the philosophers, there is Galen (second century CE), who holds that the body is like a “harmonious lyre” (Ἀρμόνιον ... λύραν), and pronounces the soul to be necessarily mortal. For Galen has argued that “the faculties of the soul follow the mixtures of the body” (τῇ κράσει τοῦ σώματος ἑπονται αἱ τῆς ψυχῆς δυνάμεις), such that soul is somehow to be defined (Isidore knows not how) as “mixture.” We understand by implication that the “mixture” produced by Galen’s lyric body is the harmonia, the music of the lyre. The difference between the philosophical “instrument” of Pythagoras and Galen’s “lyre” lies in the relationship in each case between instrument and soul. According to Pythagoras, the soul skillfully uses its instrument to produce certain effects. For Galen, meanwhile, the soul is the effect which the instrument produces, skilled user unknown.

The crux of Isidore’s interest is the extent to which injury to the body might damage or destroy the soul. A harmony, he points out, must be lost with the instrument which produces it. It seems, furthermore, that harmony and disharmony correspond not to life and death, but rather to virtue and vice: Thus, the loosening of the strings might cause (and explain) sinful behaviour, such that the individual soul cannot be responsible for the quality of its own actions. Within Galen’s “temperamental” paradigm, the soul loses both immortality and morality, two characteristics which are fundamental to Isidore’s (Christian) conception of the soul.

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7 Isid. Pel., Ep. 4.125 (PG 78, 1197C).
8 Isid. Pel., Ep. 4.125 (PG 78, 1197C).
10 The model of soul as “harmony” is not what Galen is arguing for in QAM, but it does reflect a traditional mode of the soul/body relationship that it seems Isidore is conflating with Galen’s argument.
11 Isid. Pel., Ep. 4.125 (PG 78, 1200B).
Even though the *QAM* treatise and the “harmony” metaphor alike invoke the balance of the body overall as the condition of psychic health, Galen’s evidence that the soul is dependent upon bodily qualities focuses on a single part, that is, the brain: If the soul were, as Plato claims, immortal (Galen argues), then it ought not to separate from the body upon the brain becoming too cold, too dry, or too wet.\textsuperscript{13} This argument is a synthesis of Galen’s two most prominent models for the body/soul relationship: the temperamental thesis (*That the faculties of the soul follow the mixtures of the body*) and the local or instrumental model, in which a single part is identified as the “seat” or “instrument” of the ruling part of the soul.\textsuperscript{14}

Isidore’s response is scathing: Galen, for all his knowledge about temperament and the brain, does not understand the ineffable bond between body and soul; what the doctor calls “soul” in not the same thing that philosophers are talking about; he should stick to what he is good at—strictly bodily healing.\textsuperscript{15} Notably, however, Isidore does not contest Galen’s local/instrumental premise, that it is damage to the brain in particular which results in the

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\item Platonist interpretations of his local or instrumental model, such as that of Isidore himself, excluded the temperamental vision of the body/soul relationship. See the invaluable discussions in Hankinson 1991 and 2006. Donini 2008 presents a clear discussion of the contradiction between the temperamental paradigm in *QAM* and Galen’s tripartition of the soul in other texts, such as his philosophical treatise *On the opinions of Hippocrates and Plato*.
\item Isid. Pel., *Ep.* 4.125 (PG 78, 1201C–D). See Galen’s own remarks in *Prop. plac.* 7.1–2, where he renounces all knowledge about the substance and (im)mortality of the soul. Elsewhere, Galen suggests that physicians do not need to understand metaphysics, but simply need to know enough to perform effective medical interventions—see, especially, the discussion in Hankinson 1993, 200–03, with references. Also useful are de Lacy 1972, 35–6 and Hankinson 2006, 235–39. Galen’s professed agnosticism was well known in late antiquity—see Nem., *Nat. hom* 2 (Morani 1987, 23.24–5): Γαληνὸς δὲ ἀποφαίνεται μὲν οὐδὲν, ἀλλὰ καὶ διαμαρτύρεται ἐν τοῖς ἀποδεικτικοῖς λόγοις ὡς οὐδὲν εἶπεντο ψυχῆς ἀποφημάτων. “Galen makes no argument, but even testifies in his works *On demonstration* that he has nothing to say about the soul.” Cf., however, Gal., *PHP* 9.7, esp. 6–8, where Galen suggests that it is useful for physicians, *but not for philosophers* to know where the ruling part of the soul is located (in the heart or in the head), since it is necessary for them to apply remedies appropriately.
\end{enumerate}
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separation of the soul. This reflects the *communis opinio* of the fifth century CE, when Galen’s arguments for the brain as the organ of the *hêgemonikon* had become deeply embedded in learned and popular culture.\textsuperscript{16} Despite the contradiction posed by scriptural emphasis upon the heart as the locus of the mind, theologians for the most part accepted in some form the association between the brain, sensation, voluntary motion, and rational thought.\textsuperscript{17}

Precisely how the (corporeal) brain was related to these faculties of the (incorporeal) soul was another question, the answer to which Isidore touches upon in strikingly abstract terms. A preferable model for the body/soul relationship, he asserts, would be that of a captain in a ship on a stormy ocean.\textsuperscript{18} The captain is the soul, the ship represents the bodily structure, and the ocean is the bodily temperament, the flux and flow of humours and vapours which affect but do not constitute the soul. Realising that if the ship of the body were to wreck in the swell of its humours, then the captain must drown, Isidore transforms the ship into a lyre and the soul into a musician. Even if the lyre is broken, the musician is not harmed. Indeed, even if the musician

\textsuperscript{16} Although medical, philosophical, and theological authors continued to note the plurality of the tradition. See the multiple possibilities for the localisation of mind or soul in the following texts: Lact., *De op. dei* 16.1–5; Aug., *De trin.* 10.7; Cael. *Aur. Acut.* 1, 8.53–4; Nem., *Nat. hom.* 2, 16.11–17.15); Thdt., *Graec. aff. cur.* 5.22–5 (SC 57).

\textsuperscript{17} Gilbert 2014 suggests a tendency toward “cardiocentrism,” especially in Origen’s wake (3–4). Gilbert’s own work shows, however, that theologians in particular could not simply be divided into “cardiocentric” and “encephalocentric” camps. Far more often, they supported both positions, depending upon rhetorical context and goals. This comes out particularly clearly in Gilbert 2014, 88–9, where Clement’s ambivalence on the question becomes “problematic.” A good example of theologian’s negotiation of the heart/brain question, albeit not within the Greek-speaking scope of Gilbert’s dissertation, is Jerome’s denial of Platonist encephalocentrism in his *Comm. in Matt.* 2.1525, where the part of the soul which Plato is said to locate in the brain is the *animae principale* (the “ruling part of the soul,” perhaps best translated as the *hêgemonikon*). Contrast this to Jerome’s acceptance in the very same text (*Comm. in Matt.* 2.889) of the Platonist tripartite soul, wherein the rational “passion” (one of three *passiones*, and described as follows: τὸ λογιστικὸν quod nos possumus interpretari rationabile) is located in the brain (*in cerebro*) and anger in the liver.

\textsuperscript{18} Isid. Pel., *Ep.* 4.125 (PG 78, 1201D, 1204A).
holding the lyre falls into the sea, the only reason why the harmony ends is that the lyre does not admit the musician’s expertise, and not that the musician is dead.\textsuperscript{19}

Isidore’s direct response to Galen invites us to explore the appropriation and rejection of the “brain,” as conceptualised in the Greek medical and philosophical traditions, by theologians and religious leaders of the fourth and fifth centuries CE. In particular, this chapter seeks to contextualise late antique representations of the brain within contemporaneous ways of theorising the body/soul relationship. Whereas chapters three and four will engage more closely with homilies and letters—that is, with the traces of the brain in genres accessible to those without an elite education—this chapter deals almost exclusively in theological and philosophical treatises. Mirroring chapter one in this respect, the present chapter glances across the scope of learned Christian speculation about what the brain is, and how it might complement or contradict important elements of Christian doctrine, such as the pivotal incarnation of the Christian God, and the transcendence of the immortal soul. Of particular concern, as we have already noted in Isidore’s letter to Proeschius, was the question of how the body could be both a necessary component of human identity, without confining the human soul to the material or conceptual container of embodiment.

One goal of this chapter is to establish a theoretical backdrop for the popularisation of the “brain” as a trope in late antique homilies and sermons. It is in learned texts that we find most explicit reflection upon the extent to which medical expertise, and medical knowledge about the brain, was incorporated in the higher education available to elites and social climbers in late antiquity. What did rhetoricians such as Isidore of Pelusium and Gregory of Nyssa learn about the brain? How did a philosopher such as Nemesius of Emesa or a politician such as Ambrose of

\textsuperscript{19} Isid. Pel., \textit{Ep.} 4.125 (PG 78, 1204A).
Milan adapt the brain to his (always his) own rhetorical agenda and worldview? Rather than survey theological accounts of the brain, however, we will focus on one question: How did the brain support—and how did the brain complicate—Christian models of the body/soul relationship? Through this question, we can access some of the highest theological stakes in early Christian examination of the brain.

The three modes of relationship we explore in this chapter are local, instrumental, and temperamental. All three had a long history in Greco-Roman philosophical and medical traditions; yet, they were not always clearly defined, and certainly were not mutually exclusive. Nonetheless, in theological works of late antiquity we do see them brought into conflict and negotiation with one another, as in Isidore’s rejection of the temperamental in favour of the instrumental model. In particular I re-examine the terms in which the most influential late antique conceptualisation of the brain is framed—that is, “ventricular localisation,” the theory that discrete psychic faculties, such as imagination, are associated with specific ventricles within the brain.

This chapter proceeds in five parts. Part one lays out some of the background for my three key terms: instrument, temperament, and localisation. In this section, I give a brief account of the concepts that these terms refer to, and demonstrate that all three were in play within late antique Christian discussions of the body/soul relationship. Part two introduces one of the central texts of this chapter, Gregory of Nyssa’s *On the constitution of the human being*. I focus here on Gregory’s arguments against encephalocentrism as a localisationist position, and the apparent conflict between these arguments and his use of the Platonist charioteer metaphor to describe the brain. I argue that there is in fact no such conflict, and that Gregory’s adaptation of the charioteer
metaphor is a strategy to avoid implying a localisationist framework, by giving bodily agency to the brain.

Part three turns from Gregory’s arguments about the brain to his elaborate metaphor of the mind as a city into which sensory impressions might enter. I contrast Gregory’s metaphor to that of his predecessor Lactantius, who describes the mind as moving within the spaces of the body like a king within a palace. What I seek to draw out here is the commonality between two very different ways of imagining the mind at work: Whilst Lactantius locates mind within corporeal space—a mode of thinking which Gregory rejects—both authors seek to imagine a space within which mind *thinks* without operating through the medium of the bodily instrument.

Part four considers a third metaphor: If the charioteer metaphor focuses upon the corporeal brain, and the city metaphor upon the incorporeal mind, a third analogy, between body and flute, seeks to bring the two parts together. Countering localisationist pathology (injury to the brain produces madness, because the mind is “in” the brain) with the argument that injury anywhere in the body might cause mental disorder, Gregory gives the example of a musician whose flute is broken. The failure of the instrument to make music does not imply the departure of the musician, only the inefficacy of the musician’s breath (*pneuma*) to animate the instrument. This metaphor brings us in full circle back to Isidore’s letter to Proeschius and the ship which transforms into a lyre. By comparing these two metaphors, we can see that Gregory’s flute responds not only to the local but also to the temperamental mode of relating body to soul. Far from being the harmony which the instrument produces, the soul—as it is imagined by both Isidore and Gregory—is the agent which makes the music. This counterpoint of metaphors reflects the processes of negotiation which characterise early Christian discussions of the soul and the body in relation to medical and philosophical discourses.
Finally, part five examines the theory of “ventricular localisation” as it appears in fourth- and fifth-century texts, particularly the works of Nemesius and Augustine. My argument is that, far from suggesting “localisation” (as it was understood to fourth-century theologians), Nemesius uses the language of the instrumental body—a strategy which allows him to posit both the providential design of the brain as an instrument for rational thought, and the independence of soul from bodily constraints. Fourth-century Christian discourse about the body/soul relationship is critical to understanding the model which Nemesius presents.

1. Some Key Terms: Instrumental, Local, and Temporal

“Instrumental,” “local,” and “temperamental” are not actor’s categories. I use them here to describe three different but interrelated approaches to thinking about the body/soul relationship. “Instrumental” describes a relationship in which the soul is an autonomous agent using the body as an instrument for producing effects, such as music or speech, within the world. The “local” mode of body/soul relationship, more commonly called “localisation,” involves “locating” parts or faculties of the soul in specific parts of the body. The “temperamental” model, finally, is the theory rejected by Isidore, that “the faculties of the soul follow the mixtures of the body.”

All three modes of thinking about the body/soul relationship had a long history in philosophical and medical discourse, where—with some negotiation—they had proved to be not mutually exclusive. Within late antique Christianity, however, there was greater pressure to define what precisely the human soul was and how it related to the body. This urgency was driven in particular by the implications which human anthropology and psychology could have
for theological doctrines, such as the incarnation and bodily resurrection.\textsuperscript{20} As we saw in Isidore’s letter to Proeschius, therefore, Christian theorisation of body/soul interaction emphasised the incompatibilities between the different modes. It is useful, therefore, to consider each mode in distinction from the others, even though, in practice, the three overlapped and intertwined with one another.

i. Temperamental

The “temperamental” paradigm, outlined by Galen in \textit{QAM}, was grounded in the traditional doctrine of humours and their related bodily qualities.\textsuperscript{21} By late antiquity, everybody agreed that the four humours (black bile, yellow bile, blood, and phlegm) were fundamental to the human constitution and to bodily (including mental) health.\textsuperscript{22} There was no such consensus, however, regarding Galen’s further argument, that the humors did not merely affect one’s health, but—through the qualities (hot, cold, wet, and dry) which they represented—actually produced mental and psychic experience, such that the activities of “soul” might be regarded as epiphenomenal upon bodily “mixtures.”\textsuperscript{23}

\textsuperscript{20} Brown 1988; Cameron 1991; Bynum 1995a. A theme in scholarship is the tension between Platonist marginalisation and scriptural centrality of the body: See especially Castelli 1992, 137; van Fleteren 2007, 352; Miller 2009.

\textsuperscript{21} See chapter one, part two.

\textsuperscript{22} T. Shaw 1998, 53.

\textsuperscript{23} Alongside Isidore’s rejection of Galen’s thesis, see Nem., \textit{Nat. hom.} 2, 23.24–25.26), arguing that Galen’s explanation of the soul as a mixture renders the soul mortal, and therefore must refer to the non-rational soul alone (that is, the faculties of soul responsible for non-rational faculties, such as pulsation and respiration). Nemesius’s arguments against Galen’s definition of soul as mixture comprise a series of contrafactuals: (1) if the soul were a bodily mixture, then everything would be animate; (2) if the soul were a bodily mixture, then it would transform, for example into the soul of a lion, when the mixture changed; (3) if the soul were a bodily mixture, then it would support the desires of the body, rather than resist them; (4) if the soul were a bodily mixture (that is, a quality), then it could be separated without the destruction of its substrate; (5)
As Isidore’s refutation of this theory suggests, the “temperament” paradigm resonated closely with the “harmony” thesis rejected by Plato in *Phaedo*, by Aristotle in his treatise *On the soul*, and by Plotinus in *Ennead IV.7*.\(^{24}\) Set shortly before Socrates’s execution, *Phaedo* includes various arguments for the immortality of the soul. Among these is the counter-argument of Simmias, that the soul is a “harmony” (or “attunement”) of the body, and therefore must be mortal.\(^{25}\) Socrates rejects this argument, on the grounds that the soul cannot be an attunement, since every soul must necessarily be “harmonious,” that is, must be good. Since virtue is not a necessary characteristic of the human soul, the harmony thesis does not convince.\(^{26}\)

Aristotle invokes the “harmony” thesis in the opening book of his influential treatise *On the soul*, stressing the idea that the soul is a “blend of opposites.”\(^{27}\) Although he acknowledges that the theory is persuasive to many, Aristotle rejects it. Among his reasons is that of Socrates: that “harmony” is better understood as a reference to health, such that the soul itself cannot by definition be a “harmony.”

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if the soul were a bodily mixture, then it would be perceptible; (6) if the soul were a bodily mixture, then continued life would rely upon health, strength, and beauty.  
\(^{24}\) Pl., *Phd.* 85e–86d and 91e–95a, esp. 86d (Burnet 1967): “Now, what shall we say to this argument, if anyone claims that the soul, being a mixture of the elements of the body, is the first to perish in what is called death?” Trans. Fowler (Cooper and Hutchinson 1997). Arist., *DA* 1.4, 407b27–408a.28 (Ross 1967). See also the recapitulation of Plato’s arguments in *Phaedo* by Nemesius in *Nat. hom.* 2, 22.19–23.23 (Morani 1987). For Plotinus’s seven counter-arguments to the “harmony thesis,” drawn in part from Aristotle’s treatise *On the soul*, see Rich 1963, 4–5: (1) soul is prior to body, but attunement is secondary; (2) soul rules and guides, but attunement does not; (3) soul is a substance, but attunement merely a condition or affection; (4) blending or mixture produces not soul but health; (5) attunement would produce a plurality of souls, since each part is blended in different proportion; (6) there would have to be another soul to act as the musician and tune the strings; (7) the instrument is lifeless and disordered, but this is untrue of the body.  
\(^{25}\) Pl., *Phd.* 85e–86a.  
\(^{26}\) Pl., *Phd.* 92a–95a. See Taylor 1983 (reprinted in Wagner 2001a) and Wagner 2001b for a clear discussion of this text.  
\(^{27}\) Arist., *DA* 1.4, 407b–408a.
A problem with the theories of harmony and temperament, recognised alike by Plato, Aristotle, Plotinus, and Isidore, is the double reference of “harmony” to both the soul itself and to moral and physical health (that is, “balance”). Ancient ethics and dietetics were deeply invested in principles of harmony and balance. The perfect soul was that which was in perfect balance; imbalance in body or soul indicated imperfection. To suggest that the soul itself might be the product of harmony was to suggest that every living individual must be in perfect balance, and therefore not need ethical or bodily improvement.

Another problem with the temperament or harmony paradigm was that it did not specify an agent responsible for producing soul. The instrument appears autonomously to give rise to harmony. It was difficult, therefore, to reconcile this mode of body/soul relationship with the Christian doctrine of an immortal, governing soul. The strong version of Galen’s temperament theory was therefore rejected by many Christian authors, although most also acknowledged, like Isidore, that bodily imbalance could impair reason and sensorimotor function. Isidore’s twist upon the harmony metaphor—reimagining the soul not as harmony but as musician—was a means of retaining the suggestion that bodily imbalance might affect the music which the body/soul produced, whilst incorporating a psychic agent.

ii. Local

“Localisation” is a familiar concept in studies of ancient medicine. One of Galen’s most widely-read works, On the affected parts, elaborates upon what was to become a common format for

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29 See Ast. Am., Hom. 14.2 for an extended discussion of how fasting affects the body and bodily activities. (This homily is ascribed to Gregory of Nyssa in much of the manuscript tradition: See Datema 1970, 197).
medical treatises: A head-to-toe (*a capite ad calcem*) discussion of diseases, categorised by the part of the body affected. Since Galen used the localisation of injury and disease in order to understand impairment of bodily activities, his discussion of pathology became a basis for theorising anatomy and function. With regard to the brain, medical localisation refers to the Galenic doctrine that, because injuries to the brain affect cognitive and sensorimotor activities, the brain must be their primary organ.

Medical localisation was a commonly accepted paradigm. As we saw in the previous chapter, disagreement regarding whether the ruling part of the soul had its primary seat in the heart or in the brain (or nowhere at all) was of long-standing importance in drawing party lines between philosophical and medical schools. The reiteration in philosophical handbooks of the question of “What is the ruling part of the soul (the *hêgemonikon*) and in which part is it?”—together with doxographic lists of authorities and their view on the question—further reinforced the idea that, even if nobody could agree on precisely where the ruling part of the soul might be located, this was the natural framing of the question. This meant that even those philosophers such as Aristotle, who had described soul precisely as *not* an autonomous entity, could be

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30 Gal., *Loc. aff.* (VIII 1–452 K.). I use my own translation except where indicated. Late antique and early medieval authors commonly structured their works “from head to toe”: See, for example, the works of Caelius Aurelianus, Aëtius of Amida, and Paulus of Aegina (esp. book 3).

31 Especially nervous anatomy, as demonstrated particularly in his experiments on live animals (see chapter one). One striking example of Galen’s success in drawing association between localised lesion and functional impairment is his cure of paralysis in the hand through treatment of the spine: Gal., *Loc. aff.* 1.6, discussed briefly in Mattern 2013, 247–48.

32 See the introduction to chapter one.

33 See chapter one, esp. fn25.

34 Cf. van der Eijk 2005a, 121: “A question like ‘What is the leading principle of the soul and where is it located?’ presupposes that there is such a thing as a leading ‘part’ or principle in the soul and that it can be located somewhere.” My discussion of this point is informed by Kuhn’s influential theory of scientific paradigms (Kuhn 2012 [1962]). Frampton 2008, 101–02 also identifies localisation as a Kuhnian paradigm, but only with regard to Aristotle and his followers.
reinterpreted as localising soul in the part to which they attributed cognitive and/or sensorimotor activities.  

Yet, “localisation” could also have a narrower scope, referring specifically to the view that the body and bodily structures are containers within which the soul might have its home. In these terms, the concept was tied to materialist or corporeal understandings of soul. This manifests itself in Isidore’s metaphor of the soul as captain at sea, and in particular in his anxiety to assure his reader that the soul will not go down with the ship. For Isidore and his expected reader, there was a frightening possibility that the “localised” soul might be thought to be trapped within the bodily shell, such that if the body sank in its own humours, then the soul might drown.

Isidore’s concern is rooted in a literalist interpretation of metaphors of localisation. The soul as captain of the ship was part of a nexus of conventional metaphors which included the monarch ruling within the city and the charioteer reigning in his horses. The image of the city in particular was used by later philosophical and medical authors as support for the encephalocentrist (brain-centred) interpretation of the body/soul relationship: Just as the monarch resides within his acropolis (or the captain within his ship), so the ruling part of the soul resides within the brain or the head. Metaphors incorporating architecture, vessels, and vehicles

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35 Aristotle, as we shall see, preferred to think of the body and its parts as “instruments.” Localisation is closely related to the instrumental mode, since instrumental parts are typically thought of as physically connected to their user. Nonetheless, as we shall see, the two forms of body/soul connection could be, and were, separated.

36 Rejected by Greg. Nyss., Op. hom. 12 (PG 44, 156.27–164.52); Aug., De trin. 10.7–8; Nem., Nat. hom. 3, 41.8–42.16). This was thoroughly in line with contemporary Neoplatonist thought, from which Nemesius borrowed the saying that the soul “is not in the body as in a vessel or a wine-skin, but rather the body is in it.” See Nem., Nat. hom. 3, 41.9–10,) with the comments of Sharples and van der Eijk 2008 at 82fn397–8, where they refer especially to Plot., Enn. IV.3 [27] 22.7–10 and Porph., Sent. 31. Rich 1963, 5–6 discusses this question in Plotinus’s own works.


38 I shall discuss the history of this image further below.
encouraged an understanding of the soul as contained locally within the body, rather than merely associated in a loose way with bodily parts.

A strictly localisationist perspective was encouraged by the generalisation of the Stoic term ἑγεμονικόν. As we saw in chapter one, Stoic philosophers understood the ἑγεμονικόν to be the governing part of the soul which resided as pneuma within the heart. With the ἑγεμονικόν understood as material pneuma, instrumental and local modes of interaction become close to indistinguishable because the ἑγεμονικόν must be by definition materially present to its instrument. It was only when questions about the localisation of the ἑγεμονικόν were transposed to the paradigm of the incorporeal soul that a breach opened up.

Early Christian authors such as Paul and Tertullian engaged closely with the Stoic concept of pneuma as the basis for material reality, including the human soul. With the rise of Neoplatonism and the circulation of Plotinus’s works in the third and fourth centuries, there was a turn toward the incorporeal soul and a desire to escape not merely from the body but from body per se. By late antiquity, the theory of localisation was strongly associated with the theory of a

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39 Colish 1985, I, 27–8 cites “the Stoic’s tendency to locate the cosmic pneuma preeminently in one place or another, be it in the sun, the center of the earth, or the circumference of the cosmos” as a parallel for the concern to locate the ἑγεμονικόν within the body.
40 See chapter one.
41 While it is clear that Paul considered pneuma, in line with both Stoic and medical authors, to be a subtle material, it is unclear whether he adopted the Stoic view that the soul was itself pneuma. The past few decades have seen a boom in scholarship examining Paul’s conception of pneuma and the human body/soul relationship in light of contemporaneous medical and philosophical theories. See, especially, D. Martin 1995; Lee 2006; Engberg-Pedersen 2010; Barrier 2014. On the material soul in Tertullian, see his treatise On the soul 5–10, with Stead 1977, 178–90 and Colish 1985, I, 9–28. It should be noted that Tertullian did not think of himself as a Stoic—quite the contrary: Karamanolis 2013, 33. See ibid., 181–213 for early Christian engagement with the psychological theories of Greek philosophy more broadly.
42 T. Shaw 1998, 32–3 argues that Christian authors tend to adopt Platonist tripartition of psychic faculties, but meanwhile follow Stoic ethical theory and practice. On philosophy and Christianity in late antiquity, see A. Smith 2004; Digeser 2010; Karamanolis 2013. Studies of individual
corporeal soul, and therefore was objectionable to Christian theologians such as Isidore and, as we shall see in part two, Gregory of Nyssa. Nonetheless, the metaphors remained. Architectural and political metaphors were particularly popular among late antique authors: The governing soul of later Platonism was compatible with Christian doctrine, and the body as a palace or temple designed to house the governing soul was resonant with Judaeo-Christian scriptures. Through these architectural metaphors, and through the importance of *pneuma* in late antique psychology, the governing soul of later Platonism and Christianity could be interpreted as residing not only metaphorically but also literally within the brain. This resulted in contradictions and tensions between and within the writings of theologians who sought to theorize an incorporeal soul.

iii. Instrumental

In the Platonist text *Alcibiades I*, Socrates defines the human being as “the user of the body,” which was likened to an instrument or tool. *Alcibiades I* was a prominent school text in late theologians and their engagement with (Neo)Platonism are common. See, for example, Cherniss 1930, Peroli 1997, and Rist 2000 (Gregory of Nyssa); Cary 2000 (Augustine).

43 One way of understanding these might be as “dead” metaphors, on which see van Rijn-van Tongeren 1997, 57–8, and also Morales 2005, 1: “‘Faded’ or ‘dead’ metaphors naturalise the power relations they enact.” As both van Rijn-van Tongeren and Morales suggest, even “dead” metaphors can remain potent. The elaborations upon architectural and political metaphors in anti-localisationist texts suggest their continued salience.

44 I discuss this Platonist image in chapter one, part four. For the association between the human body and a building in the Judaeo-Christian scriptures, see 1 Cor. 6:9: “Or do you not know that your body is a temple of the Holy spirit within you, which you have from God, and that you are not your own?” See also John 2:18–21: “The Jews then said to him, ‘What sign can you show us for doing this?’ Jesus answered them, ‘Destroy this temple, and in three days I will raise it up.’ The Jews then said, ‘This temple has been under construction for forty-six years, and you will raise it up in three days?’ *But he was speaking of the temple of his body.*” Trans. NRSV.

45 Berryman 2009, 213–15 discusses metaphors of the body as an instrument in ancient philosophy and early Christianity, with particular focus on Gregory of Nyssa.
antiquity, being commonly recognised as the introduction to Plato’s works. Its lesson about the instrumental body would have echoed, perhaps a little confusingly, works of Aristotle that students encountered earlier in the curriculum: In his treatise *On the soul*, Aristotle famously defined the soul as “the first actuality of the natural and instrumental body.”

What does it mean? Philosophers continue to debate whether “instrumental” (ὀργανικοῦ), denotes a body that is an instrument, as in Plato, or if rather it refers to a body that is composed of “instrumental” parts, that is, of “organs,” which perform functions for the sake of the body as a whole. Both possibilities are suggested by his biological works, which explain that: “each of the parts is for the sake of something, and likewise also the whole.” What it means to say that a part is “for the sake of something” is also explained:

Since every instrument is for the sake of something, and each of the parts of the body is for the sake of something, and what they are for the sake of is a certain action, it is apparent that the entire body too has been constituted for the sake of a certain complete action.

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46 Pl., *Alc.* 1: 129e3: οὖκον καὶ παντί τῷ σώματι χαρὴται ἄνθρωπος. The body is to be considered an organon by analogy to 129c8 and 129d4–5. See the commentary in Denyer 2001, 213–15.
48 Blumenthal 1996, 25: Aristotle was considered a “propaideutic” among Neoplatonist philosophers.
The idea that each part is “for the sake of” something is a classic tenet of Aristotelian teleology. What, though, does it mean for “the entire body” to be “constituted for the sake of a certain complete action”? The late antique student of philosophy would discover this in his ethical corpus:

If the work of a human being is activity of soul in accordance with reason, or not apart from reason, and the work, we say, of a given sort of practitioner and a good practitioner of that sort is generically the same, as for example, in the case of a cithara-player and a good cithara-player ... if all this is so, the human good turns out to be activity of soul in accordance with excellence.

The function of the human being qua cithara is “activity of soul in accordance with reason.”

Note that in none of these examples is there a clear reference to the agent who uses the instrument. In Aristotle’s reference to the cithara, the “human being,” as parallel to “a cithara-player” appears as the agent, while the purpose (“activity of soul”) suggests that the soul, rather than the body plays the part of the cithara. Aristotle’s On the soul, however, teaches us not to interpret the passage in this fashion: The soul is neither instrument nor user, but the “first actuality” (ἐντελέχεια ἡ πρώτη) of the body. The human being, far from being the user of either body or soul, is necessarily constituted of both. Soul and body cannot be split, as in Plato, into an instrumental relationship.

53 Johnson 2005 (on the question of whether Aristotle means that each part was caused to exist for the sake of its function [causation], or simply that each part can be explained as performing a certain function [explanation]); Leunissen 2010 (on Aristotle’s analytical methods in developing arguments for natural teleology); Gotthelf 2012 (a collection of essays on Aristotelian teleology, many of them previously published).

54 Arist., EN 1.7, 1098a7–17: εἰ δ’ ἐστιν ἐργὸν ἀνθρώπου ψυχῆς ἐνέργεια κατὰ λόγον ἢ μὴ ἄνευ λόγου, τὸ δ’ αὐτό φαμεν ἐργὸν εἶναι τῷ γένει. τοῦδε καὶ τοῦδε σπουδαίου, ὡσπερ κιθαριστοῦ καὶ σπουδαίου κιθαριστοῦ · εἰ δ’ οὗτος ... τὸ ἀνθρώπων ἀγάθων ψυχῆς ἐνέργεια γίνεται κατ’ ἀρετήν. Translation adapted from Broadie and Rowe 2002. I leave out the text which Broadie and Rowe bracket, since it is not relevant to my argument.

55 See fn49, above.
The comparison between human being and cithara-player is slippery because Aristotle is using two different meanings of the word “work” (ἔργον), which Broadie and Rowe translate as “function.” The first (“the work of a human being”) is the agent-less function of the body: Each part is for the sake of something else, just as the whole body is for the sake of the activities of soul in accordance with reason. The “work” of the human being is identical with the instrumental function of the body. The second (“the work ... of a given sort of practitioner”) is the kind of work proper to an agent who uses an instrument. The “work” of the human being is complemented by the function of the musical instrument, but is not co-extensive with it.

Aristotle’s instruments are defined by their purposive function, not by their usefulness to an agent. With Plato’s abstraction of soul from both, late antique students found that the soul might use bodily instruments in order to perform its rational activities, that is, to gain knowledge. In Plato’s Republic, “the power to learn is present in everyone’s soul and ... the instrument with which each learns is like an eye that cannot be turned around from darkness to light without turning the whole body.” In the cosmological myth of Timaeus, the gods bind within the face of

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56 Even when Aristotle’s instrumental metaphors do require a human agent, he does not emphasize the agent but rather the action and purpose involved. Arist., PA 1.5, 645b17–20: οὐ γὰρ ἢ πρίσις τοῦ πρίονος χάριν γέγονεν, ἀλλ’ ὁ πρίον τῆς πρίσεως: χρήσις γάρ τις ἢ πρίσις ἐστίν. Ὡστε καὶ τὸ σῶµα ποι ὑπὸ ψυχῆς ἑνέκεν, καὶ τὰ μόρια τῶν ἔργων πρὸς ἃ πέφυκεν ἐκαστὸν. “For sawing is not for the sake of the saw, but the saw for sawing; for sawing is a certain use. So the body too is in a way for the sake of the soul, and the parts are for the sake of the functions in relation to which each one of them has naturally developed.”

the human body “instruments for all the forethought of the soul” (ὄργανα ... τῇ τῆς ψυχῆς προνοίᾳ).

Galen, drawing upon (and challenging) both Aristotle and Plato, provides an eminently Aristotelian definition of “instrument” in the opening book of his introductory text On the method of medicine: “I call “instrument” (ὄργανον) a part of the animal which carries out a complete function, like the eye with regard to sight, the tongue with regard to speech, and the legs with regard to walking; similarly, the artery, vein, and nerve are both “instruments” and parts of animals.” Galen is particularly interested in the vocal organs as akin to musical instruments in their capacity to produce rational speech. In this analogy he moves closer to Plato, separating the hêgemonikon, as musician, from the instrument.

Isidore’s metaphor of the body a musical instrument echoes images in Platonist, Aristotelian, and Galenic presentations of the organon. It also resounds strikingly in the writings of Plotinus. At the end of his treatise On happiness, Plotinus writes on the philosopher’s approach toward the body which he tends and bears with as the musician cares for his lyre, as long as it can serve him: when the lyre fails him, he will change it, or will give up lyre and lying, as having another craft now, one that needs no lyre, and then he will let it rest unregarded at his side while he sings on without an instrument.

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58 Pl., Tim. 45a7–b1.
59 Gal., MM 1 (X 47.8–11 K.): ὄργανον δὲ ὄνομάζω μέρος ζώου τελείας ἐνεργείας ἀπεργαστικῶν, ὅπως ὤφθελμον ὄφας καὶ γλώτταν διαλέκτου καὶ σκέλη βαδιστικῶν· οὕτω δὲ καὶ ἀρτηρία καὶ φλέβες καὶ νεφρόν, ὄργανα τε καὶ μόρια ζώων ἐστί. κατὰ ταύτην γοῦν τὴν χρήσιν τῶν ὄνομάτων οὐ πρὸς ἰμηδόν μόνον, ἀλλὰ καὶ πρὸς τῶν παλαιῶν Ἑλλήνων ὄρισθεισαν, ὁ μὲν οὖν ὀφθαλμὸς ὀνομασθῆσαι καὶ μόριον ζώου καὶ μέρος καὶ ὄργανον.
60 Gal., UP 7.5, 6 (III 525.16–526.8 and 529.8–11 K.). See Pl., Pol. 268b1–5 and Symp. 215c1–d1 for the mutual interchange of musical instruments and human vocal organs.
The body is an instrument not (only) insofar as it is useful, but because it can be discarded.

Standing at the culmination of the Neoplatonist curriculum, Plotinus gives the student an opportunity to reflect back upon their journey from the “instrumental” body of Aristotle, with the caveat that it is not the “human being” that is to be compared to the “cithara-player,” but the human soul. Plotinus’s argument builds upon an observation made by Plato in his late dialogue, *Theaetetus*: Here, Plato refutes the claim that “knowledge is perception” by distinguishing perceptions, gained through “sensory instruments,” from the understanding of abstract distinctions, an activity of soul which does not have a bodily instrument, but works through itself alone.\(^2\)

Later authors, particularly within the medical tradition, might argue that the bodily instrument of abstract thought is the brain. As we shall see later in this chapter, the role of the brain in the activity of reason was troubling to Christian preachers and philosophers. In his *Theaetetus*, Plato had opened up the possibility for distinguishing a certain kind of intellectual capacity as requiring no bodily instrument. The body might be “for the sake of” the activities of soul according to reason, but the rational activities of soul could get along quite merrily without bodily interference. Plotinus’s vivid metaphor, as we have already seen in Isidore’s letter, was to provide a happy illustration for Christian authors invested in the transcendence of the soul. The soul’s existence as an autonomous entity, separable from the body, protects it from implication in

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\(^2\) Pl., *Theaet.* 184–85, esp. 185d7–e2 (Burnet 1967): ἄλλα μὰ Δία, ὃ Σώκρατες, ἔγωγε οὐκ ἄν ἔχομι εἰπεῖν, πλὴν γ’ ὅτι μοι δοκεῖ τὴν ἄρχην οὐδ’ εἶναι τοιοῦτον οὐδὲν τούτοις ὁργανὸν ἴδιον ὀσπερ ἐκεῖνοις, ἄλλα’ αὐτή δι’ αὐτῆς ἢ ἴσως τὰ κοινὰ μοι φαίνεται περὶ πάντων ἐπισκοπεῖν. “But I couldn’t possibly say. All I can tell you is that it doesn’t seem to me that for these things [sc. distinctions such as being and not-being, likeness and unlikeness] there is any special instrument at all, as there is for the others [sc. sensory objects]. It seems to me that in investigating the common features of everything the soul functions through itself.” Trans. Levett, rev. Burnyeat (Cooper and Hutchinson 1997).
bodily injury, such that, while it requires the body in order to perform its proper activities in the bodily realm, it retains its ontological integrity following the body’s demise.

Conclusion

This section has mapped out three key modes of body/soul relationship that were at issue in late antique philosophical anthropology. Most striking in the ancient negotiation of each is the concern that soul might somehow be harmed through its connection to the body. Christian authors, as we shall see, adapted the traditional metaphors and models to avoid the twin threats posed by the harmony thesis (soul as supervenient and transient phenomenon) and localisation (soul confined as material stuff).


Gregory of Nyssa (c. 335–395 CE) was the youngest of the Cappadocian “fathers”—a trio of bishops headed by Basil of Caesarea (Gregory’s eldest brother) and Gregory of Nazianzus (Basil’s closest friend). The two Gregories were each roped into episcopal duties—Nyssen from his work as a teacher of rhetoric, and Nazianzen from his ascetic retreat—in order to support Basil in his demanding and ambitious role as the metropolitan bishop in Caesarea. Unlike his elder brother, Gregory of Nyssa was distinctly unsuccessful in his early years as bishop, and it was only in the aftermath of Basil’s death (379 CE) that Gregory came into his own as an author of christological, theological, and anthropological treatises. The work most relevant to the current chapter is his epistolary treatise, On the constitution of the human being. Addressed to

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63 Greg. Nyss., Op. hom. (PG 44, 149.15–152.7). There is no critical edition of this text. I use my own translations throughout. This text is often called On the making of man, but this translation
another brother, Peter of Sebaste (also a bishop), the treatise is introduced as a continuation of Basel’s hexameral sermons, in which Basil had promised to discuss further how the human being was created. Since Basil had died before fulfilling his promise, Gregory writes, it is incumbent upon his successors to complete the task.

*On the constitution of the human being* is not, however, a straightforward explication of Genesis 1:26–7 or Genesis 2:7, which were the key hexameral verses for this question. Instead, Gregory begins (1) in conventional philosophical fashion with a discussion of the human’s station between spiritual beings and earthly animals, established by the creator as ruler over the animal world. Parallel to the intermediary role of the human being in nature is the combination of earthly and spiritual aspects in the human being itself, which involves the union of material body with rational mind. Gregory therefore devotes the second section of his treatise to (2) the relationship between body and mind. Following this discussion, the treatise turns to (3) a discussion of human sexuality and resurrection, before Gregory concludes—somewhat of the Greek title (περὶ κατασκευῆς ἀνθρώπου) is inaccurate on several counts; I use *On the constitution of the human being throughout*. Recent studies of Gregory’s anthropology in this text include Ladner 1958; F. M. Young 1983; Cavarnos 2000; Bishop 2000; Wessel 2009.

Sermons, that is, concerned with the narrative of creation in six days (Gk: hexámera) presented in Genesis. Hexaemeral sermons were inspired by the exegesis of the Jewish author Philo of Alexandria (*On the creation of the world*). Important examples include the works of Basil of Caesarea (*Hexaemeron*) and Ambrose of Milan (*Exameron*). Each of these texts strives to explicate the creation narrative verse-by-verse, through the lens of ancient natural philosophy, cosmology, and anthropology. The standard work on hexameral sermons is still Robbins 1912. On Philo, see above all the detailed work of Runia 1986 and 2001. For a recent but brief study of Basil’s *Hexaemeron*, see Lim 1990.


surprisingly—with a final chapter dedicated to (4) explicating the “constitution” of the human body from a medical perspective.\(^68\)

The focus of Gregory’s work is the mind (νοûς) and its relationship to the body.\(^69\) Like Isidore, Gregory insists that the soul is in no way corporeal. In section (2), he devotes an entire chapter to refuting the argument that mind can be located in any single part of the body. In order to defend this position, he invokes two anonymous versions of localisation—cardiocentrism and encephalocentrism—and systematically refutes arguments which he attributes to those who hold each view.\(^70\)

The arguments given for localisation with the brain are threefold: (1) Symbolic location (“the head has been constructed by nature just like the acropolis of the whole body”).\(^71\) (2) Local damage entails functional impairment (“reasoning is led astray from its ordered state by damage to the mêninx, and that those heavy in the head with wine become ignorant of propriety”).\(^72\) (3) Sensation must happen close to the sensory organs, that is, in the cerebral membrane (“but the

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\(^69\) Gregory’s use of the word “mind” (νοûς) is a departure from typical discussions of the body/soul relationship. Whilst “soul” encompasses non-rational faculties, such as generation, pulsation, digestion, and the emotions, “mind” refers to intellectual faculties alone. Since, however, Christian authors often used “soul” to refer only to the rational soul or “mind”—that is, to the immortal and rational human soul which is the image of the creator god—Gregory’s usage here is more of a clarification of terms than a shift in referent. Cf. Nem., Nat. hom. 1, 1.1–2.13). See also Drozdek 2007 for a discussion of nous in earlier Greek philosophy, where it referred to the divine “mind” (85–94) and also to human intellect (esp. 238).
\(^70\) Greg. Nyss., Op. hom. 12 (PG 44, 156.36–45): The heart is considered to be the location of the hégemonikon because it is in the center of the body, and so enables the distribution of impulses to voluntary movement. The movement of thought is akin to fire, and the heart is the source of bodily heat. These arguments are strongly informed by Aristotelian and Stoic psychophysiology. For the cardiocentrist position, see chapter one, esp. fn237–fn240.
others say that the *mēninx*—for so they call the membrane surrounding the brain—is like the foundation and the root for all the sensory organs”). 73 Gregory does not comment on (1), and allows (3) that the cerebral membrane may indeed be “the foundation of the sensory organs … having folded the brain within itself, and being anointed by vapours [rising] from it.”74 His denies, however, that the role of the cerebral membrane in sensation necessitates that “the incorporeal nature [sc. mind] be confined within spatial bounds.”75

In order to substantiate his argument, Gregory focuses on (2), the argument that local damage entails impairment of the function associated with those parts. The argument implicit in Gregory’s summary is that injury to the brain causes damage to the activities of the mind. Gregory’s strategy is to provide an alternative account of mental illness, which he explains as the withdrawal of mind from a body which has turned away from (its) nature. How this incorporeal mind interacts with body, Gregory refuses to explain: Since the human mind is in the image of God, and since God is incomprehensible, the mind must be incomprehensible also.

This declaration of God as incomprehensible to the human mind is rooted in Gregory’s more general inclination to apophaticism, that is, to negative rather than positive statements about the divine (for example: “God is not material,” rather than, “God is spiritual”).76 In the

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76 Noble 2002; Ludlow 2007; Stang 2013.
fourth century, the degree to which one might know the divine was a contentious issue.\textsuperscript{77}

Gregory’s argument for the incomprehensibility of the human mind also served indirectly, therefore, as an argument for his position on the incomprehensibility of God.\textsuperscript{78}

In section (4), however, Gregory moderates his position in order to incorporate a less apophatic medical perspective. This is, indeed, the section in which Gregory explicitly introduces and appropriates medical authority. Describing a tripartite system derived from Galen—the heart as the fount of blood, the liver of nourishment, and the brain as the source, via the nerves, of motor function—Gregory provides a detailed physiological explanation for how the perfect mixture of heat and fluid “anoints the membrane surrounding the brain” (ὑπαλείφει τὸν περιεκτικὸν τοῦ ἐγκεφάλου ὑμένα),\textsuperscript{79} such that the brain itself, “like some charioteer, bestows impulse and faculty for the movement and rest of every part upon all the convergences of bones and joints, as well as upon the sources of the muscles.”\textsuperscript{80}

The use of “charioteer” (ἡνίοχος) here is striking. The term is central, after all, in Plato’s 

\textit{Phaedrus}, where it describes the relationship between the parts of a soul: the charioteer

\textsuperscript{77} Laird 2013, 135: The fourth-century “heresy” of the Anomoeans included the claim that God is comprehensible to human beings.


(representing reason) and two horses, one obedient and the other disobedient. If the charioteer allows the good horse to lead, then the soul will attain heavenly knowledge and virtue; if the bad horse gets the upper hand (or hoof), meanwhile, then the charioteer will fall. Gregory’s metaphor aligns the brain with the rational and governing soul.

Gregory is perhaps not drawing his charioteer metaphor directly from Plato. Galen had made a similar leap, albeit without direct mention of the brain, in his discussion of voluntary and involuntary movement toward the end of his treatise On the causes of respiration: “Choice is like a charioteer who moves the reins and the horses; the nerves are like the reins, and the muscles are like the horses; similarly, the use is the desired end of breathing, as victory is of chariot racing.” This sense that the neura are to be compared to reins, guiding a horse with mechanical force, echoes Aristotle’s suggestion that the neura are like puppet strings, loosening and contracting through the movement of the pneuma in the heart. Gregory’s choice of the

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81 Pl., Phdr. 253d–256a. A central question in discussion of this Platonic metaphor is precisely what aspects of soul the two horses represent, and what kind of evil the “bad horse” embodies (Belfiore 2006, 187). Hackforth 1952, 72 follows convention in aligning the charioteer metaphor of Phaedrus with the tripartite model of Republic 4, such that the prior articulation in Rep. 4 of the tripartition of the soul is assumed in order for the charioteer metaphor to be understood. White 1993, 89–91 critiques this interpretation, and in 156–63 further makes clear that orientation toward the object of desire and obedience to the intellect or charioteer is what forms the basis for the relationship between the members of the charioteer metaphor, rather than different psychic faculties per se. Mayer forthcoming notes the appearance of the image of the soul-as-charioteer at various points in Chrysostom’s homiletic corpus. On the popularity of the charioteer metaphor in Christian ascetic writings, see T. Shaw 1998, 86fn19, citing Basil of Ancyra, Evagrius, Gregory of Nyssa, Basil of Caesarea, John Chrysostom, and Jerome. As Shaw explains, the metaphor operates as a figure of abstinence and psychic control in these texts.


83 Arist., MA 10, 701b1–10. See my discussion in chapter one. Cf. Berryman 2009, 211 for a similar image in the Stoic philosopher-emperor Marcus Aurelius: “Marcus Aurelius makes frequent use of the comparison to puppets worked by strings. The term he uses is etymologically
“charioteer” metaphor emphasizes the mechanical action of the *neura* as reins transmitting force applied by their possessor. At the same time, the brain as charioteer retains an agency not elsewhere attributed by Gregory to a part of the body.

Gregory’s reduction of the Platonic rational soul to the brain, Galenic in tone, sits uneasily alongside his rejection of localisation and, in particular, the encephalocentrist position, elsewhere in his treatise. Yet it can also be read as a limiting strategy. If the mind, within the scope of the metaphor, were to retain its position as charioteer, then the brain must become the chariot, and Gregory would be left with a localisationist argument. Instead, he distinguishes the intellectual governance of the mind from the corporeal governance of the brain. The brain, we might be led to understand, governs the body just as mind governs the irrational parts of the soul. The middle term shared both by Plato’s soul and by Gregory’s brain, the salient function of their charioteer, is not the property of reason, but the act of guidance and governance to another, lower being.

Read carefully, Gregory’s different positions on encephalocentrism might be reconciled: The kind of encephalocentrism Gregory denies in section (2) is localisation of the kind that

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connected to *neura*, the term used first for the sinews that move an animal’s limbs and, later, the nerves. Marcus Aurelius uses the puppet image to claim that our impulses pull us around.” See, e.g., M. Aur., *Med.* 6.28: θάνατος ἀνάπαυλα αἰσθητικῆς ἀντιτυπίας καὶ ὀρμητικῆς νευροσπαστίας καὶ διανοητικῆς διεξόδου καὶ τῆς πρὸς τὴν σάρκα λειτουργίας. “Death is repose from sensory impressions, from impulsive manipulation by puppet strings (ὀρμητικῆς νευροσπαστίας), from the tracks of thought, and from responsibility for the flesh.”

84 Schiefsky 2007b, 88.

85 Gregory’s navigation of the brain and the incorporeal intellect echoes that of Plotinus, who argued that the brain was not the seat of the discursive phase of the soul (for the soul is omnipresent, although its functions may be dispersed), but at the same time recognised the brain as the centre of the sensorimotor nervous system. See Rich 1963, 10; Tieleman 1998.
assumes either a material soul, or the entry of soul into material vessels. The kind of encephalocentrism which Gregory accepts in section (4) works apart from the direct management (although not without the permeation) of the incorporeal mind; there is localisation of governing function, but not of mind itself.

At the same time, it is worth paying attention to the contradiction. The shift in Gregory’s orientation speaks to the multiple rhetorical agendas at work in his text. He is not here outlining any one medical teaching on the brain for its own sake. Rather, he is borrowing and adapting different frameworks and nuggets of information for his own, various purposes. We can understand these purposes in terms of the different roles which Gregory needed to play—most obviously, theologian, public leader, and pastor.

i. Theologian

Upon Basil’s death, Gregory inherited from his brother one of the most fraught theological conflicts of the late fourth century: the battle with Eunomius and his followers regarding whether the “son of God” shared an identical or a similar essence with “God the father,” or if the two must be essentially different (and unequal). The debate was complex and involved multiple

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86 Wessel 2009, 33: “Although he does not say so precisely, the thrust of his argument, and the concerns that underlie it, suggest that for Gregory the *hegemonikon* was synonymous not with the tripartite soul, air, or blood, or with any of the physical places that ancient medicine may have ascribed to it, but rather with the mind or *nous*. Because the *hegemonikon* was synonymous [sc. in Gregory’s understanding] with the incorporeal mind, to locate it in a particular place would have been to circumscribe improperly the aspect of the human person that was made in the image of the divine.”

87 Wessel 2009 argues that Gregory successful synthesizes Galenic, Aristotelian, and Platonist notions of mind, body and soul, in order to chart a course between dualism and “extreme materialism” (37).

88 Boersma 2013, 24–7 offers a lucid introduction to these works and their immediate context. On the “Eunomian” or “Neo-Arian” controversy, see Hanson 1988 and Vaggione 2000.
claims, counter-claims, and refutations.\textsuperscript{89} What is important here is that it motivates, in part, Gregory’s discussion of mind in the treatise \textit{On the constitution of the human being}.\textsuperscript{90}

When Gregory determines that the question of precisely how the incorporeal and indivisible mind works in relation to the multiple bodily senses is ultimately incomprehensible, he has in mind the argument of his more directly polemical work \textit{Against Eunomius}. There he tackles the question posed by Eunomius of how generation might exist without passion—that is, how the Trinity could include both father and son without bodily or psychic passion being involved.\textsuperscript{91} In his insistence upon the godlike incomprehensibility of mind in relation to body, Gregory takes as his premise the argument he makes elsewhere, that the incarnation itself, as the ideal type of mind–body interaction, is ultimately incomprehensible and unconstrained by the laws of human nature and corporeality.\textsuperscript{92} Gregory’s argument that mind is incomprehensible and cannot be contained within any bodily part is directed ultimately toward an understanding of God as necessarily free from corporeal entanglement and constraint.

\textbf{ii. Pastor}

A second important responsibility which Gregory undertook was pastoral care of his congregation: Bishops and priests needed become authoritative experts on the human body not because of the medical or physiological knowledge which they display (although this appears in

\begin{itemize}
\item \textsuperscript{89} See Gregory’s three treatises \textit{Against Eunomius}. For translation and discussion of books 2 and 3, see Karfíková, Douglass, and Zacchuber 2007; Leemans and Cassin 2014.
\item \textsuperscript{90} This is the argument of Barnes 1994.
\item \textsuperscript{91} Barnes 1994, 3–8.
\item \textsuperscript{92} Barnes 1994, 11, emphasizes the unity of the human mind in Gregory’s account: “\textit{On the Making of Man} manifests Gregory’s growing role in the polemic against Eunomius. His purpose is to argue that just as the mind is one despite its multiple faculties (\textit{dynamai}) and diverse operations (\textit{energeiai}), so too God is one.”
\end{itemize}
Gregory’s text as an important qualification), but because they were responsible for the health of the soul.\(^93\) Gregory is concerned chiefly with the question of how the soul might be affected by the sickness or injury of the body. His first step in this regard is to refute the localisationist paradigm of organic mental illness.

Encephalocentrist philosophers and physicians argue that, since inflammation of the cerebral membranes correlates to mental dysfunction, the mind must be located in the brain. Gregory seeks to disprove this argument by the example of phrenitis (acute delirium with fever), which Gregory explains, following an archaic aetiology, as the injury of membranes in the sides of the body (\textit{phrenes}).\(^94\) Mental disorder is caused, therefore, not by damage to any single part of the body, but by injury to the body \textit{per se}. It is necessary to accept, Gregory argues, that any bodily injury might cause mind to withdraw from the body, since the alternative is to assume that swelling or inflammation in the region of, for example, the brain, might “push out” mind, as if it were a corporeal entity. Mind clearly is not corporeal, and therefore the localisationist argument must be wrong.\(^95\)

The question of how a dysfunctional body might affect its soul was a central concern in Gregory’s rejection of localisation. This is a theme that we saw in Isidore’s metaphor of the lyre also, and we shall return to it in section three. Gregory’s rejection of the role of the brain in mental pathology is here in service of a holistic vision of psychosomatic disorders. It is a striking rejection precisely because phrenitis was, in late antiquity, the poster-child psychological illness used by philosophers for identifying the location of the \textit{hēgemonikon}: Typically, it was located in

\(^93\) On this, see chapters three and four, below.
the brain.\textsuperscript{96} Gregory overrides this association in order to deconstruct the implication that because inflammation causes psychic affection, the soul must in such cases be squeezed out. Following upon this dissociation of bodily inflammation from the escape of the soul were the moralising conclusions that (1) a sickness of the soul must be intentional (that is, not imposed by the body), and (2) even in persons displaying symptoms of mental disorder or deviant behaviour, the soul remained present throughout.

iii. Bishop

The final aspect of Gregory’s role as bishop of Nyssa was that of public authority and leader within the church. This motivated his appropriation of medical authority regarding the “constitution of the human body” in chapter thirty (described as section (4) above), where we find Gregory’s medically-informed account of the brain and other organs. At the opening of this chapter, Gregory writes that anyone who wishes to know the precise constitution of their body might draw upon medical texts concerned with, for example, anatomy or the usefulness of the parts. If, however, “there is anyone who seeks for the church to become the teacher of all these things, so that no outside voice might be required … we shall briefly present an argument about these things also.”\textsuperscript{97} One motivation for Gregory’s more thorough adoption of a medical perspective in this chapter is, therefore, the desire to effect an overall shift in authority regarding the human body from medical to theological experts.\textsuperscript{98} Whilst the knowledge might derive from

\textsuperscript{96} See chapter four for a more extensive discussion of phrenitis and localisation.
\textsuperscript{98} See R. D. Young 1993, 359. On the competitive aspect of scientific knowledge about the workings of the human body in ancient medicine, see especially Gleason 2009.
medical sources, it is here spoken by (and filtered through) the mouthpiece of the church.

Gregory’s adoption of Galenic doctrine regarding the brain in this section functions as a necessary landmark in presenting his account as medically authoritative.\(^99\)

**Conclusion**

In this section we have seen the first of a number of complex metaphors which Gregory introduces in his anthropological treatise in order to explicate the relationship between mind, body, and brain. The central paradox of the charioteer which Gregory borrows from Plato is that, on the one hand, Gregory denies conventional arguments that the brain is the seat of the mind, and on the other hand gives the brain the reins, as it were, which usually belong to the rational soul. I have argued that Gregory’s apparent contradiction can be understood, first, as a strategy to maintain a separate sphere of command for the brain, such that soul need not be contained within for the brain to function, and, second, as a consequence of Gregory’s multiple rhetorical and professional commitments. In some contexts, it was important for him to emphasise Galenic doctrine, the outlines of which had become common knowledge by late antiquity, whilst in other contexts, it was more important to stress the weak points of medical doctrine, especially at the juncture between medical theories about the brain and philosophical theories about the soul.

\(^99\) On early Christian engagement with contemporaneous science, see R. D. Young 1993, Ludlow 2009, and Karras 2011. Wallace-Hadrill 1968 provides a broad account of late antique Christian authors’ discussion of “nature.” His discussion demonstrates familiarity with the details and frameworks of natural philosophy, but does not engage with questions of authority over or definition of specific bodies of knowledge.
3. Localisation: Making Space for the Soul

In the previous section, we saw Gregory appropriate a conventional metaphorical reference to the soul (a charioteer) for a part of the body (the brain) in order to maintain the mind and body in separate spheres. In this section, we shall encounter another example of this strategy, but in reverse: Here, Gregory takes a traditional metaphor for the body (an architectural structure, commonly a city) and applies it to the mind.

The metaphor of the city as a body was common in ancient political philosophy. Conversely, that of the body as civic architecture and soul as ruler, and sometimes as citizen population, was familiar within philosophical anthropology. As we have already seen, Gregory rejects as evidence for encephalocentrism the common image of the rational soul as monarch within the acropolis of the head, surrounded by the sensory organs as scouts and guards. This

100 For the most part, discussion of these metaphors focuses on the analogy between political community and the integrity of the body. See, for example, Gleason 2009, 70: “The body figures the polity because its component parts move cooperatively under hierarchical direction.” (Cf. Gleason 2009, 85–7). Yet, as Gleason points out, this “body politic,” sometimes “takes on architectural dimensions” (71). Gleason, in keeping with most studies of this metaphor, explores in greater detail the body politic and in actions of the individual human body than the architectural metaphors and their relevance for ancient anthropology. In part, this is because the city-as-body metaphor proved foundational in sociology (see, for example, Herbert Spencer’s classic essay, The Social Organism, first published in 1860), which later provided the backdrop for the anthropological work of, above all, Mary Douglas (1966, and more precisely 1970). Douglas’s influence on late antique studies, through the vector of Brown 1988 (see the discussion of Douglas’s influence in the preface to Brown 2008), has meant a channelling of energies away from the architectural and toward agential. Yet, as the examples gathered in Runia 1986, 306–08 show, the Platonist metaphor of the head as an acropolis, surrounded by towers and guards, was enduringly fruitful in later centuries. For more general use of architectural metaphors of the body in early Christian literature, see Amb., Hex. 6.9.1 (the exegesis of the creation of human and animal kinds as analogous to a tour of the city) and 9 (the body as civic architecture); Thdt., De prov. 3 (PG 83, 588–605) (the body as a city); Phil., Op. mund. 6.17.24 (the creator of the world as an architect). See also the brief discussion in Tieleman 1996, 41.

101 The full text is to be found at Greg. Nyss., Op. hom. 12 (PG 44, 156.45–50): ἢ δὲ τὸν ἐγκέφαλον ἀφιεροῦντες τῷ λογισμῷ, ὥσπερ ἀκρόπολιν τινα τοῦ παντὸς σώματος τὴν κεφαλὴν
metaphor was drawn from a combination of Plato’s *Laws* 12, 964e–965a (the guards are sensory organs surrounding the city that is the body) and *Timaeus* 69d6–70c1 (the immortal and rational soul resides as a monarch within the acropolis of the head, defended by the spirited part of the soul, which resides in the guardhouse of the heart). In late antiquity it had great currency, within both medical and Christian anthropologies. Gregory’s rejection of the trope—already marked in itself—is made even more striking by the fact that it follows an extended account of the city of the mind. The difference between the two metaphors is that the traditional version, which Gregory rejects, assumes that the mind acts as ruler within corporeal spaces of the body, whilst in the second, Gregory’s own, the architectural spaces themselves are subsumed into the mind. That is, the architectural spaces themselves are envisioned as incorporeal, such that brain and cranium disappear.

In this section, we will examine two versions of the soul-as-ruler metaphor in order to demonstrate the centrality of spatial localisation to ancient conceptualisations of the rational soul at work within the body, and to explore some of the strategies which theologians explored in order to present localisation on their own terms. We shall begin with an example provided by Lactantius (c. 240–320 CE) in his treatise *On the craftsmanship of god*. In this text, Lactantius envisions the rational soul as an anthropomorphic agent, travelling between parts of the body according to the kind of cognitive activity it pursues. The second example we shall examine is

δεδομήσας παρὰ τῆς φύσεως λέγουσιν· ἑνοικεῖν δὲ ταύτῃ καθάπερ τινὰ βασιλέα τὸν νοῦν, οḏὸν τις ἀγγελιφόρος ἢ ὑπασπιστὰς, τοῖς αἰσθητηρίοις ἐν κύκλῳ δορυφοροῦμενον.

102 Reydams-Schils 2008, 189 seems to attribute the transformation of Plato’s metaphor to Philo: “Plato allocates to spirit the role of guardian of the soul. Philo displaces this metaphor by applying it to the senses, substituting his dominant model for Plato’s.” There are, however, earlier examples, which are presented in Runia 1986, 306–08. See also the discussion in Sharples and van der Eijk 2008, 22–3.

103 See, for example, Gal., *PHP* 2.4.17; Amb., *Hex*. 6.9.55.
Gregory’s metaphor of the mind as a city in *On the constitution of the human being*. Circling back to Gregory’s text by way of Lactantius will allow us to glimpse what Gregory saw himself to be arguing against, and what theoretical gaps he needed to attend to in his disembodied city of the mind.

i. The Brain as a Palace

In his treatise *On the workmanship of God*, Lactantius grapples with questions similar to those treated by Gregory in his *On the constitution of the human being* and Basil in the *Hexameron*:

How does earthly creation, including in particular the human body, reveal the intention and agency of the creator? To what extent does knowledge produced within the field of natural philosophy or cosmology support or challenge scriptural claims? How might Christian

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104 The standard translations are ANF-07 and FC 54, but I use my own translation throughout. Bowen and Garmsey 2003, 1–3 provides a concise overview of Lactantius’s life and career; 1–54 more generally introduce Lactantius’s scholarship, in particular his treatise *Divine Institutes*, which is the subject of the book. Digeser 2000 discusses Lactantius’s involvement in the development of a Christian empire, with particular focus (again) on *Divine Institutes*. Meinking 2013 offers a close analysis of Lactantius’s use of Platonist philosophy, examining in particular *On the anger of god*. Much less has been written on the treatise *On the workmanship of god*. See, though, Marbach 1889, 24–8 for a review of Lactantius’s discussion of the “seat of the soul” and the location of the hégemonikon, with particular reference to *On the workmanship of god*; more recently, see Roots 1987.

105 On this question with regard to other fourth-century Christian authors see F. M. Young 1983; R. D. Young 1993; Tsakiridis 2010; Karras 2011; Boudon-Millot and Pouderon 2005. Lindberg 2010 lays out the popular scholarly understanding that Christianity and barbarian invasions spelled the end of Greek science; Lindberg is rightfully cautious about the idea that “Christianity” was fundamentally opposed to “science.” More generally on the relationship between “science” and “religion” in the historical study of both, see the lucid comments in Cunningham 1988 and Fancy 2013, 1–13.
conceptions of divinity and humanity be explicated through the lens of philosophical ideas more familiar to the traditionally-educated Greco-Roman elite?\textsuperscript{106}

Lactantius’s discussion of localisation is a case in point. Adopting a tactic found elsewhere in late antique Christian sources, Lactantius expresses uncertainty regarding where and even whether the mind might be found to reside:

That the constitution of the mind\textsuperscript{107} is also incomprehensible—who does not know this, except the one who does not possess [a mind] at all, since the location and the nature of mind are themselves unknown?\textsuperscript{108}

He then proceeds to set forth the various opinions: localisation in the heart, brain, or blood; general permeation of the body by soul; and thoroughgoing materialism (which he rejects). After first rejecting the cardiocentric position on the grounds that the heart is not directly connected to the sensory organs and therefore cannot allow engagement of the rational soul with the outside world, Lactantius turns to the brain, which he considers to be a more plausible candidate:

For, of course, that which has governance over the whole body ought to reside on high, as though in the citadel of the body … just as the lord and governor of the world is himself on high; and then, because all the senses—that is, the attendant limbs of hearing and seeing and smelling—have been placed in the head, and the passages of all these run not to the breast but to the brain. Otherwise, we would necessarily perceive more slowly, whilst the faculty of sensing descended by a long route through the neck all the way to the breast. These, indeed, do not err much, or perhaps even at all.\textsuperscript{109}

\textsuperscript{106} For the importance of traditional education (\textit{paideia}) in forming Greco-Roman elite culture and community, see Brown 1992; Gleason 1995; Schmitz 1997; Borg 2004; van Hoof and van Nuffelen 2014. The classic work, now to be read somewhat critically, is Jaeger 1961.

\textsuperscript{107} A difficult translation: \textit{mentis … rationem}. Here, \textit{ratio} is taken to mean “constitution,” that is, how the mind is constructed and how it works. Both the ANF-07 and the FC 54 translations render \textit{ratio} as “nature.” One might also read the Latin as “reason of the mind,” that is the faculty of thought.

\textsuperscript{108} Lact., \textit{Op. dei} 16.1: \textit{mentis quoque rationem incomprehensibilem esse quis nesciat nisi qui omnino illam non habet, cum ipsa mens quo loco sit aut cuiusmodi nesciatur?}

\textsuperscript{109} Lact., \textit{Op. dei} 16.4–6: \textit{opertuisse scilicet quod totius corporis regimen haberet, potius in summo tamquam in arce corporis habitare … sicut ipse mundi dominus et rector in summo est; deinde quod sensus omnis id est audiendi et uidendi et odorandi ministra membra in capite sint locata, quorum omnium uiae non ad pectus, sed ad cerebrum ferant; alioquin necesse nos esset
Here we find a hint of the soul/monarch–head/acropolis metaphor which Gregory was to reject. Rather than spin out the allegory, however, Lactantius focuses on the anatomical question of whether there are appropriate passages between the sensory organs and the proposed organ of mind. Lactantius is not, however, interested in precisely how the sensory impressions are received, but rather in the real-time movement of the “faculty of sensing” between, for example, the nose and the brain. The passages he articulates are designed not for the exchange and flow of fluids and gases within bodily systems, but for the peregrination of soul. Physiological language is drafted in to describe what are, in Lactantius’s eyes, primarily psychic events.\textsuperscript{110}

What is more striking is that soul travels not in order to make use of different bodily parts (as it does use the sensory instruments), but rather to escape the possibility of interacting with the body:

For it seems that the mind, which holds sovereignty over the body, has been established on high in the head, just as god in heaven, but that when it engages in some reflection, it travels to the breast and withdraws as if to some secret recess in order to elicit and bring forth counsel as if from a hidden treasury.\textsuperscript{111}

Lactantius begins, conventionally enough, by restating the Platonic analogy between mind and king or god, situated in head (or citadel, or heaven) and overseeing the body (or city, or earth). Rather than structure the brain and heart relationship in terms of acropolis and guardhouse as in Plato’s \textit{Timaeus}, however, Lactantius maps these two organs as a reception chamber and a room.

\textit{tardius sentire, donec sentiendi facultas longo itinere per collum ad pectus usque descenderet. hi uero aut non multum aut fortasse non errant.}
\textsuperscript{110} On the usefulness of physiological and anatomical language in articulating psychological events, see Lockett 2011.

\textit{Lact., Op. dei 16.6: uidetur enim mens, quae dominatum corporis tenet, in summo capite constituata tamquam in caelo deus, sed cum in aliqua sit cogitatione, commovere ad pectus et quasi ad secretum aliquod penetrale sededere, ut consilium tamquam ex thensauro recondito eliciat ac proferat.}
for privy counsel (ad secretum aliquod penetrale) as well as a “hidden treasury” (thensauro recondito).112

The withdrawal of mind from the brain allows Lactantius to conceptualise a process of thought independent of the senses. According to his own argument, it is the necessary connection between sensation and thought which prevents primary localisation of mind in the heart: “When we are absorbed, therefore, in reflection, and when the mind is occupied and hides itself deep within, we typically neither hear whatever noises are around us, nor see whatever is in our path.”113 If mind were located primarily in the heart, then we would be unable to interact with our surroundings.

Yet, when temporary, this disabling of the senses could be reframed as a peculiar skill, in accordance with late antique philosophical and ascetic ideal of rational contemplation disengaged from the sensory world.114 This offered a premise for marking out a separate bodily space—a “secret recess”—in which “deep” reflection might occur.115 Lactantius uses the

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112 Cf. Thdt., De prov. 3.27–8 (PG 83, 601.7–8, 25–7), where the brain is like “some wealth and treasure” (τινα πλουτον και θησαυρον) or “wealth” (πλούς in the acropolis of the skull. The standard English translation is Halton 1988, but note that Halton incorrectly translates “wealth” as “rich man” on the second occasion. We might understand these references to the brain as a treasure through Augustine’s Gn. litt. 7.17, which emphasises the role of the cerebral ventricles as sources “from which all the senses are distributed” (unde sensus omnes distribuuntur).

113 Lact., Op. dei 16.6–8: ideoque cum intenti ad cogitandum sumus et cum mens occupata in altum se abdiderit, neque audire quae circumsonant neque uidere quae obstant solemus. id uero siue ita est, admirandum profecto est quomodo id fiat, cum ad pectus a cerebro nullum iter pateat, sin autem non est ita, tamen nihilo minus admirandum est quod diuina nescio qua ratione fiat ut ita esse uideatur.

114 On disability as a product of perspective and cultural context, see Laes, Goodey, and Rose 2013, esp. 1–16. On the philosophical and ascetic ideal of rational contemplation detached from bodily (that is, sensory) interference, see Bradford 2012 (specifically with regard to Evagrius of Pontus). Harvey 2006 and Rousseau 2010 [1978] elaborate upon the tension between worldly engagement and disengagement within fourth-century asceticism.

115 The now classic account of the emergence of internal language to describe the self, and in particular self-dialogue, is Cary 2000, which argues that Augustine invented the concept of the
In the same move, Lactantius transforms the brain/heart debate into an opportunity to conceptualise thought as not reliant for its existence upon specific bodily instruments, such as the nerves, the ventricles, and the cerebral membrane. Whilst medical texts paid significant attention to the question of how brain function could support sensorimotor functions, cardiocentric accounts of psychophysiology had lost credibility in the wake of Galen’s dominant encephalocentric model. Thus, Lactantius freely notes that there is no anatomical evidence to support his theory about the migrations of the mind:

But if this is so, it is necessary indeed to wonder at how it comes about, for no passage lies open from to the breast from the brain; but if it is not so, then one must wonder no less at the fact that, by I don’t know what divine arrangement, it comes about that it seems to be so.

“inner self.” Augustine’s inner self, like that of Neoplatonist philosophy, was specifically not spatial/corporeal (3–4). Mastrangelo 2007, 164–67 argues that Augustine does not have the monopoly on interiority, since the Spanish Latin poet Prudentius articulates a similar conception. Interesting for our purposes is Mastrangelo’s argument for this idea of the inner self, which is based on Prudentius’s metaphorical discussion of inner space—the battleground upon which the virtues and vices confront one another. Prudentius, Augustine, Lactantius, and (as we shall see) Gregory of Nyssa were all wrestling with a common problem: How to deploy the entrenched micro/macrocosmic relationship between individual human and political or cosmic community, whilst insisting upon the immateriality and non-spatiality of the inner cosmos or polis.

Gilbert 2014 offers a thorough account of fourth-century Christian engagement with the question of whether the hegemonikon is located in the brain or the heart. See chapter one, fn238 for the tendency of the Judaeeo-Christian scriptures to privilege the heart.

See chapter one, part three. Knuutila 2004–05, 48–50 discusses Arab-Islamic and early modern European attempts to reconcile Aristotelian cardiocentrism with the encephalocentrist perspective derived from the medical model of ventricular localisation found in Nemesius of Emesa’s treatise On the nature of the human being.

Lact., Op. dei 16.8: id uero siue ita est, admirandum profecto est quomodo id fiat, cum ad pectus a cerebro nullum iter pateat, sin autem non est ita, tamen nihilo minus admirandum est quod diuina nescio qua ratione fiat ut ita esse uideatur.
For Lactantius, this absence of medical explanation indicates not so much lack of authoritative support as an opportunity to reimagine the cardiac chambers as a space within which thought might be performed by the soul alone, whilst the more superficial cognitive activities carried out within the brain remained reliant, at least in part, on bodily instruments. The incomprehensibility of the mind is as useful a rhetorical strategy for Lactantius as it is for Gregory.

ii. The Mind as a City

Gregory opens his metaphor of the mind as a city not in response to the question of localisation, but as part of a discussion of how “mind works through the senses.”

The mind is responsible for both speech (sent out from a person) and sensation (drawn in and interpreted); like the divine mind, it is simple, and is comprehensible neither by spatial boundaries nor by human understanding. In order to understand mind, Gregory suggests, we must imagine it to be a city—unified and yet complex; infinitely varied in its participants and its activities, but ordered according to a common rule. Describing the entrance of sensations into the mind, Gregory writes as follows:

And just as if there were some spacious (πολύχωρος) city receiving all who come to it from different approaches, all of them will not gather together at any particular place within the city, but some will go to the agora, some to the houses, others to the churches, or the highways, or the alleyways, or the theatres, each according to his own inclination—some such city of the mind I imagine settled within us, which the different entrances keep filling through the senses, while the mind, categorizing and examining...

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each of those who enter, allocates them to each their own place (μεταχωροῦσι). And as, to continue the example of the city, it may often be that those who are of the same tribe and kin do not enter by the same gate, coming in by a different entrance, as may be, but are none the less, when they come within the perimeter of the wall, brought together again, being familiar with one other. … Some such thing I seem to see in the spaciousness (εὐρυχωρίας) of mind.121

Gregory’s primary concern here is the analysis and synthesis of sensory impressions, which he compares to the common entrance, the separation and gathering, and the ranking (perhaps for the purposes of a census) of visitors to a city. What is important for our purposes is the extent to which Gregory uses the language of spatiality.

The preponderance of architectural language, first of all, suggests the anatomical–architectural connection upon which the encephalocentric position was founded: The activity described all takes place within the perimeter wall (ἐντὸς τῆς περιβολῆς τοῦ τείχους), a term used by Gregory’s younger contemporary, John Chrysostom, in his treatise On vainglory and on raising children, to describe the outer surface of the body into which the sensory organs (similarly imagined as gates) had been built.122

121 Greg. Nyss., Op. hom. 10 (PG 44, 152.38–153.7): καί ὡσπερ εἰ τὰς πολύχωρος εἰς πόλις ἐκ διαφόρων εἰσόδων τοὺς πρὸς αὐτήν συμφωνοῦντας εἰσδημομένη, οὐκ ἐπὶ τὸ αὐτὸ κατὰ τι τῶν ἐν τῇ πόλει συνδραμοῦντες οἱ πάντες, ἀλλ’ οἱ μὲν κατὰ τὴν ἁγορὰν, οἱ δὲ κατὰ οἰκῆσεις, ἄλλοι κατὰ τὰς ἐκκλησίας, ἤ τὰς πλατείας, ἢ τοὺς στενοποὺς, ἢ τὰ θέατρα, κατὰ τὴν ἱδίαν ἕκαστος γνώμην μεταχωροῦσι· τοιαύτην τινὰ βλέπω καὶ τὴν τοῦ νοῦ πόλιν τὴν ἐνδοθέν ἐν ἑμέν συνφικισμένην, ἢν διάφοροι μὲν αἱ διὰ τῶν αἰσθήσεων εἴσοδοι καταπληροῦσιν· ἕκαστον δὲ τῶν εἰσόντων φιλοκρισιν τε καὶ διεξετάζων ὅ νοῦς τοῖς καταλλήλως τῆς γνώσεως τόποις ἐναποθέτεται. Καί ὡσπερ ἐπὶ τοῦ κατὰ τὴν πόλιν ὑποδείγματος, ἔστι πολλάκις ὑμοφύλους τινὰς ἅντας καὶ συγγενεῖς μηδὲ τῆς αὐτῆς πόλης ἐντὸς γενέσθαι, ἄλλοι παρέχοντας κατὰ τὸ συμβάν εἰσοδραμόντος, οὐδὲν δὲ ἔτοι καὶ τοῖς περιβολησμοὺς τοῦ τείχους γενόμενοι, πάλιν ἔστω ἀλλὴς ἕκαστος πρὸς ἀλλήλους οἰκεῖους ἐχοντες· … τοιοῦτον τι βλέπω καὶ ἐπὶ τῆς κατὰ τὸν νοῦν εὐρυχωρίας.

122 Joh. Chrys., Inan. glor. et ed. lib. 360–63: τὸ λοιπὸν ἀπαν σῶμα ὡσπερ τείχος ἔστω, πόλις δὲ αὐτῷ ὁ ὀρθαλμός, ἢ γλώσσα, ἢ ἀκοὴ, ἢ ὀφθαλμός, εἰ βουλεῖ καὶ ἢ ἥψη. “Let all of the rest of the body be like the wall, and let its gates be the eyes, the tongue, hearing, smell, and, if you please, touch.” For a translation of the whole text, see Laistner 1951. This image is grounded in the influential architectural metaphor of Plato’s Timaeus. See fn100, above.
The city itself is riddled with architectural spaces, each of which represents a space within which a sensation—and, perhaps, ultimately a memory or thought, might be deposited. Most significantly, Gregory reiterates the language of space (chôra): The city is poluchôros (spacious) and possesses euruchôria (broad space); different sensory impressions are “transferred in space” (meta[chôr]ousi). This appears striking in retrospect, because it is two chapters later when Gregory rejects the idea that local swelling might push out the mind (as if it were a corporeal substance which could not find “space” (chôran) for itself within a full vessel), for the mind is not “accustomed to take up space” (philo[chôre]i). Such an opinion, Gregory claims, is “corporeal” (sômatikê). The mind, being incorporeal, cannot take up space—except, of course spaces within the mind. Where Lactantius has us imagine unmapped thinking space in the heart, Gregory points his reader toward incorporeal space as the proper realm of the mind.

For all this language of spatiality and architecture, the mind is not only the physical city but also the civic official who, “categorizing and examining each of those who enter, allocates them each to their own place.” Gregory’s mind acts like the soul–monarch of the localisationist paradigm, except that the architectural structures within which it rules are incorporeal. This is a cunning move on Gregory’s part because it enables him to represent the

123 Chôra is an important concept in its own right in Platonist philosophy (Pl., Tim. 48e4), and has become fruitful in postmodernist philosophy also (see, e.g., Sallis 1999). I do not engage with Platonist or postmodernist concepts of chôra here.
mind in familiar terms as a governor or monarch, while at the same time avoiding the model of mind as anthropomorphic representative of the self, trapped within the confines of the skull.

Slippage between civic architecture and civic official is not unusual in late antique versions of the Platonic metaphor: A contemporaneous example is found in Ambrose’s *Exaemeron*, also inspired by Basil’s hexameral sermons.\(^{126}\) In the ninth homily in this series, Ambrose arrives at the creation of the human being. Initially describing the head as a citadel (*arx*) served by the eyes as guards (*speculatores*), he shifts position partway through his metaphor to redescribe the head as a civic official (*censor* or *consultator*) and the eyes as watchtowers (*specula*), within which the powers of sight reside.\(^{127}\)

Both Gregory and Ambrose play with the metaphor of the rational soul as an anthropomorphic figure, governing from within the acropolis of the head, from the throne of the brain. Yet, both also adapt it such that the mind or soul cannot be held simply to reside within the cavity of the head or even the cavities of the brain, as if it were some corporeal substance. Where they part is in how they “cut the joints” of body and soul in relation to civic architecture and its inhabitants.\(^{128}\) Whereas Ambrose overcomes the body/soul divide by animating individual bodily parts, Gregory gives architectural structure to the soul, thereby proposing a space within which mental activity might “take place.”

Despite Gregory’s rejection of spatial localisation, this paradigm of body/soul interaction performs vital work for sustaining Christian doctrine of the soul: That is, to present the soul

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\(^{127}\) Amb., *Hex.* 6.9.54–60. Ambrose is presumably alluding to Cic., *ND* 2.140: *nam oculi tamquam speculatores altissimum locum optinent, ex quo plurima conspicientes fungantur suo munere.*

\(^{128}\) Pl., *Phdr.* 265e–266b, esp. 265e1: διατέμνειν κατ᾽ ἄρθρα. For this phrase in ancient medical discourse, see von Staden 1995a, 513 and Simon 2013.
rather than the body as the thinking being. Whereas the temperamental mode denied that the soul was a “being,” and the instrumental mode made body necessary to accomplishing the psychic activity of thought, localisation created space for an autonomous, rational entity, with its own thoughts, judgments, and desires. The paradigm of localisation enabled metaphorical accounts of the soul that signify agency and subjectivity, while at the same time threatening to confine the soul as a corporeal entity within the vessels of the body.

Conclusion

For thought to be demonstrably a property of the rational soul rather than of the animated body, it was necessary to posit a space unequipped with instruments of thought, such as eyes or brain, which otherwise might be identified as the necessary media of intellectual activity. Both Lactantius and Gregory strove to create such a space, Lactantius within the bodily container of the heart, and Gregory within the incorporeal territory of the mind. Gregory’s metaphor can be understood, therefore as an attempt not only to explicate “how the mind works through the senses,” but also how intellection might happen within a kind of space, without being dependent upon or entangled with bodily instruments.

4. The Anatomy of a Flute

So far, we have examined one metaphor of the brain which excludes the governing soul, and one metaphor of the mind which excludes the body (and in particular the brain). In this section we shall encounter one final metaphor in Gregory’s text: the body as flute and the mind as a talented musician.
Gregory introduces this metaphor as an alternative to the localisationist claim that mental illness results from injury to specific parts. His account of localisationist psychopathology appears, as we saw above, as follows: Inflammation of bodily parts pushes out the soul as if it were itself a body. His own explanation emphasises the agency of mind in turning away from the body: “the mind is naturally at home with that which is disposed according to nature, but is a stranger to that which deviates from nature.”

This explanation is predicated upon Gregory’s foundational argument that mind permeates the body as a whole, and is not confined within any single part. The metaphor he chooses to represent this, however, positions the mind outside of the body, as a musician playing the flute:

But since the entire body has been crafted like some musical instrument, (a) just as often happens to expert musicians, who are unable to display their expertise if their instruments, being useless, do not admit their skill (for, having deteriorated over time, being broken in an accident, or made useless by rust and decay, it [sc. an instrument] remains voiceless and inactive, even when blown into by one who is seen to excel in

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130 This is the canonical Neoplatonist teaching on the body/soul relationship. See the account of Nem., Nat. hom. 3, 40.22–41.4, 41.5–10): ώς γάρ ὁ ἕλιος τῇ παρουσίᾳ τὸν ἀέρα εἰς φῶς μεταβάλλει ποιῶν αὐτὸν φωτοειδή, καὶ ἐνοῦται τῷ ἀέρι τὸ φῶς ἁπάγχυτος ἄμα καὶ αὐτῶς κεχωμένον, τὸν αὐτὸν τρόπον καὶ ἡ ψυχή ἐνομωμένη τὸ σώματι μένει πάντως ἁπάγχυτος, κατά τοῦτο μόνων διαλλάττουσα, ὅτι ὁ μὲν ἕλιος σῶμα ἄν καὶ τόπω περιγραφόμενος οὐκ ἐστὶ πανταχοῦ, ἤνθα καὶ τὸ φῶς αὐτοῦ, ὡς ὅδε τὸ πῦρ... ἡ δὲ ψυχή, ἁπάγχυτος οὐσία καὶ μὴ περιγραφόμενη τόπω, ὅλη δὲ ἀλλοῦ χωρεῖ καὶ τοῦ φωτὸς ἀυτῆς καὶ τοῦ σώματος, καὶ οὐκ ἐστὶ μέρους φωτοειδοῦς ὑπ’ αὐτῆς, ἐν ὃ μὴ ἄλλο πάρεστιν. οὖ γάρ κρατεῖται ὑπὸ τοῦ σώματος, ἄλλ’ αὐτὴ κρατεῖ τὸ σῶμα, ὅδε ἐν τῷ σώματι ἐστὶν ὡς ἐν ἀγγείῳ ἢ ἁσκό, ἄλλα μᾶλλον τὸ σῶμα ἐν αὐτῇ. “For as the sun by its presence transforms the air into light, making it have the form of light, and light is unified with the air, mixed with it without being compounded, in the same way the soul is unified with the air, mixed with it without being compounded, the same way the soul is unified with the body while remaining altogether uncompounded, differing only in that the sun, being a body and circumscribed in place, is not everywhere that its light is, as is also the case with fire. ... the soul, being incorporeal and not circumscribed in place, occupies as a whole the whole of its light and of its body.” Trans. Sharples and van der Eijk 2008. Cf. Galen’s description of pneuma and its action upon the nerves, as discussed in chapter one, above.
play the flute), (b) in this manner the mind too, ranging throughout the whole instrument and touching upon each of the parts in accordance with its intellective functions, works according to its proper nature upon the parts which are disposed according to nature, but with regard to the parts unable to receive its skillful movement, it remains ineffective and unavailing.\(^{131}\)

The two parts of Gregory’s metaphor approach the comparison from different angles. In part (a), the focus is upon the whole as opposed to the parts. In line with his preceding argument against localisationist explanations of mental pathology, Gregory points out that if an instrument is broken in any way, then the musician will not be able to play it, no matter how skilled that musician might be. In this way, he wins two points: first, it is not a specific placement of damage which silences the potential flautist; and, second, the flautist (or mind) is in no way harmed by damage to the flute. Part (b), meanwhile, returns our attention to the individual parts. The mind ranges like the musician’s breath through the whole instrument, acting upon each part (meros) in accordance with that part’s alignment with nature (that is, its health). Whilst Gregory insists elsewhere upon an incorporeal mind, he compares it here to the substance which in the Stoic metaphysical system is identified as the corporeal soul.\(^{132}\)

All metaphors must necessarily include dissonance as well as harmony.\(^{133}\) In this case, the dissonance must be intentional. Gregory could, after all, have settled like Isidore for a lyre, as

\(^{131}\) Greg. Nyss., Op. hom. 12 (PG 44, 161.9–24): ἀλλ’ ἐπειδὴ καθάπερ τι μουσικὸν ὄργανον ἀπαντᾷ τὸ σῶμα δεδημοσιοῦργηται, (a) ὅσπερ συμβαίνει πολλάκις ἐπὶ τῶν μελῳδεῖν μὲν ἐπισταμένων, ἀδυνατοῦντον δὲ δεῖξαι τὴν ἐπιστήμην, τῆς τῶν ὄργανον ἀρετῆς ὡς παραδεχομένης τὴν τέχνην (τὸ γὰρ ἢ χρόνῳ φθαρέν, ἢ παρερήγησιν ἐκ καταπτώσεως, ἢ ὑπὸ πνεύμου καὶ εὐρύτος ἡχειρισμένον, ἥθελεν γενέσθαι καὶ ἀνενέργητον, κἂν ὑπὸ τοῦ προέχειν δοκοῦντος κατὰ τὴν αὐλητικὴν τέχνην ἐμπνέεται); (b) οὕτω καὶ ὁ νοῦς δι’ ὅλου τοῦ ὄργανου δῆμου, καὶ κατεξολόσεις ταῖς νοητικαῖς ἐνέργειαῖς, καθὸ πέρασκεν, ἐκάστῳ τῶν μερῶν προσπατόμενος, ἐπὶ μὲν τοῦ κατὰ φύσιν διακειμένον τὸ οἰκεῖον ἐνήγησεν, ἐπὶ δὲ τῶν ἀσθενοῦντον δέξασθαι τὴν τεχνικὴν αὐτοῦ κίνησιν, ἀπαρχότος τε καὶ ἀνενέργητος ἐμείην.

\(^{132}\) For a fuller account of pneuma, see chapter one.

\(^{133}\) Thus, according to Zangwill 2014, 147: “almost all metaphorical descriptions are false,” that is, there is obvious dissonance and difference between the objects of comparison. Borck 2012,
suggested by his earlier invocation of Galen’s analogy between the vocal organs and both flute and lyre. At stake in his choice of the flute is the permeation of the instrument by the animating body, that is, the pneumata. Reason, like music, arises from the operation of the whole through the medium of the air. Yet, in Gregory’s metaphor, the pneumata is no mere medium. Instead, it appears as mind itself, just as in Stoic psychology. Why does Gregory hint at this materialistic vision of soul, instead of selecting, like Isidore, the musician as the analogue for the mind?

We gain some clarity through comparison of Gregory’s metaphor of the flute and Isidore’s approximation of the body both to ship and to lyre. Let us re-examine Isidore’s metaphor in full:

[A] For both bodily imbalance and drunkenness bring disease upon the soul also, such that, (1) just as a captain might be tossed about by a great storm and, going underwater, does not demonstrate his special knowledge, (2) the soul is, as it were, submerged, and is driven and thrown about all over the place, wherever the current and the waves strives to carry her. [B] Now, this shows not that the soul is not immortal, but that her activities are impeded: (3) For the most excellent musician, (a) having a discordant lyre or (b) falling into the sea, will not play a tuneful melody.

114–15 points to the usefulness of metaphoric dissonance: “For a long time tools and instruments were simply not sophisticated or complex enough for use as compelling correlates [sc. to the brain]; yet their very limitations could be employed for demonstrating the brain’s functional superiority. … Machines may always have lacked something essentially human but the mobilization of machine metaphors operated on the crucial basis of a differentiality between men and machines.” Dissonance can emerge not only between the metaphor and its referent, but also within the metaphor itself: In his discussion of the “social organism,” Levine 1995, 243 emphasises the “diverse associations” which cluster around metaphors, such that “the same metaphor can be used to represent divergent positions.”


135 Isid. Pel., Ep. 4.125 (PG 78, 1201C–1204A): ἦ γὰρ δύσκολον τῷ σώματος καί ἡ μέθη καὶ τῇ ψυχῇ παρατέθειτο τῷ πάθημα· ἦ δὲ, καθάπερ κυβερνήτης ἐν πολλῷ κλύδωνι, ταράττεται, καὶ τῆν οἰκείαν ἐπιστήμην οὐκ ἐπεδίεικνυται βυθισθείσα· ὅσπερ δὲ ὑποβρύχιος γεγενημένη, ἄγεται καὶ φέρεται πολλάκις, ὅπου ἂν ἡ ψυχὴ τῇ κλύδωνι ἐργασαμένη χειραγωγήσῃ. Οὐ γὰρ τὸ
This complicated and contradictory image repays close reading. We begin with Isidore’s two claims: [A] Both bodily imbalance and drunkenness bring disease upon the soul (as well as upon the body). Nonetheless, [B] neither condition destroys the soul; each only impedes its activities. The purpose of these claims is the overall argument that the soul is not constituted by the mixtures (here represented by the humours) of the body.

Isidore supports this argument by presenting a model of the soul–body relationship in which soul is susceptible to affection by bodily condition, but is neither constituted by bodily condition nor, like the body, mortal. The first claim [A] establishes that the soul is affected by bodily imbalance, whilst the second claim [B] adds the qualification that the soul is not affected existentially, but only in its ability to perform its regular operations through the body. This qualification is necessary in part because of the (traditional) metaphor which Isidore chooses in order to illustrate claim [A]: The soul is like a captain tossed about on the stormy sea of her bodily humours and, often, the alcohol she has consumed (1, 2).

136 Diseases of the soul could, of course, also affect the condition of the body. Indeed, drunkenness was often considered by Christian preachers to be symptomatic of an unhealthy soul. I shall consider this further in chapter three.

137 Whilst the captain is typically imagined as male, the grammatical gender of soul is feminine, and this is reflected in how the soul is imagined also. Isidore’s ship metaphor draws perhaps on Arist., DA 1.3, 406a5–8, but it was to become a conventional image for the body/soul relationship in ancient and medieval accounts. Bos 2003, 123–35, with references. See especially Alex. Aphr., De an. 15.19 for the reinterpretation of Aristotle’s “seafarer” as a captain with “navigational skill.” Within a learned context, the metaphor might have invoked Plotinus’s critique of it as insufficient (Plot., Enn. IV.3.21; Rich 1963, 7). Since Isidore does not mention Plotinus, and since the goal of this chapter is to explicate the brain rather than the body/soul relationship per se, I shall leave this tangent aside. The shipwreck was also a figure for spiritual disorder: Thus, in his homily Against those who say that demons govern worldly affairs, Chrysostom uses the shipwreck to explain both falling into sin and demonic provocation.
While this metaphor allows Isidore to grapple with one concern (morality), it threatens the other (immortality). That is, the captain can in no way said to be constituted by (or “the harmony of”) the turbulent waters and instead is imagined as an autonomous moral agent. Nonetheless, the captain, being mortal, might drown.\textsuperscript{138} This is not the implication which Isidore intends. He therefore introduces claim [B] (“Now, this shows not that the soul is not immortal …”), which he illustrates through a third image: (3) The soul becomes a musician and the ship becomes a musical instrument. If the musical instrument (b) is disharmonious or falls with the musician into the sea, then the musician will not (necessarily) drown. In states of bodily imbalance or drunkenness, therefore, the soul might find that her “activities are impeded,” but will not be destroyed.

Isidore’s shift between the traditional metaphors of the soul as captain of the ship and the soul as musician strumming a lyre exposes the shortfall of each. If the body is a ship, then the soul might sink with it. If the body is a lyre, then one cannot explain how the soul is affected (although not constituted) by the storm of bodily qualities. Throwing musician and lyre into the humoral sea is one, perhaps not entirely convincing, way of borrowing from each metaphor to shore up the other. In this metamorphosis of figures and parts, the soul emerges as apparently safe,\textsuperscript{139} albeit holding an unusable lyre. It is notable that the lyre is not destroyed, only put “out

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wherein the demon is somebody boring a hole in the ship’s hull (Joh. Chrys., \textit{Daem. non. gub.} 2 [PG 49, 247.2–248.2]). This metaphor cleaved to Christian convention in aligning the “salvation” of the soul with psychosomatic healing.\textsuperscript{138} The ship metaphor is, therefore, localisationist in the sense that Gregory refuted in his treatise \textit{On the constitution of the human being}.\textsuperscript{139} Perhaps rescued like Arion by a dolphin (Herod., \textit{Hist.} 1.23–4). Strikingly, the dolphin was a common symbol in early Christian art, where it is thought to represent resurrection and perhaps the figure of Christ (Jensen 2010, 51–2 and 2014, 159). The musician who falls into the sea, only to be picked up by a passing dolphin, might be interpreted, therefore, as the soul in need of salvation. I am grateful to Nino Luraghi for this suggestion
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of harmony.” Given the right conditions and some new strings, it might even be usable once again. In this way, Isidore allows us to imagine both drunkenness and death as temporary conditions of the body which impede the psychic faculties, but which do not injure, much less constitute, the soul.

Isidore’s metaphor provides illuminating commentary on Gregory’s image of the flute. The dissociation of soul from bodily instrument was what made instrumentalisation an attractive model for both authors, in contrast to the entanglement implied by both the temperament and the localisation paradigm. Gregory’s identification of mind with the musician’s breath is intended not only to model a non-local relationship between mind and body (and between mental dysfunction and bodily injury), but also to counter traditional and perhaps popular theories of the soul as a harmony or balance, by separating out mind (cause) from music (effect). In positioning the mind as the breath inspired by the musician, Gregory was also guarding his anti-localisationist claim against implication with the temperamental paradigm. Whilst he might assert an incorporeal mind, mind was by no means merely epiphenomenal upon the condition of the body. What allows both Isidore and Gregory to bypass some of the challenges of the local and temperamental paradigms is the traditional metaphor of the body as an instrument. As the next section demonstrates, the instrument was indeed a powerful conceptual tool in late antique explications of the brain and its relationship to both (the rest of the) body and soul.

Conclusion

This section has explored Gregory’s metaphor of the body as a flute in light of Isidore’s metaphor of the body as a lyre. By reading these two images alongside one another, we can see that Gregory, while he seems to contradict himself in proposing that “mind” is the (material)
breath of the musician, selects this metaphor in order to steer clear not only of a model of “confinement” (that is, of localisation), but also of the temperamental thesis, that the soul is merely the sum of its psychic activities, which are produced through the configuration or the mixtures of the body. By positing soul as “breath” Gregory emphasised its ontological independence of the body, while at the same time ensuring that it was not conceived of as a body itself.

5. Ventricular “Localisation”

“Instrument” (organon) had long been a familiar conceptual metaphor in medical discourse about the body. Furthermore, its deployment in philosophical and theological anthropologies rendered it visible in popular thinking about the body specifically in relation to the soul. That is, the interrogation and deployment of the instrument as a solution to the challenges posed by local and temperamental models gave the organon of medical literature new resonance. We see this articulated particularly sharply in the late antique articulations of a medical theory about the brain which came to be known as “ventricular localisation.” This model was to become canonical in medieval and early modern medicine, both European and Islamic. In the earliest extant version of this theory, found in a treatise by the otherwise unknown Greco-Syrian bishop Nemesius of Emesa (fl. 390 CE), the ventricles within the brain are identified as the “instruments” of the faculties of soul. It is the argument of this section that Nemesius’s choice of

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140 See my discussion in the introduction, and part one, above. Conceptual metaphors are the implicit metaphors which structure conceptual systems.
the word “instrument” is a response to debates about the validity of instrumental over local and temperamental models for the body/soul relationship. The common rendering of Nemesius’s account as “placing” the psychic faculties “in” specific ventricles not only mistranslates the text, but also obscures the broader resonance of Nemesius’s terms.

i. Nemesius of Emesa: Ventricles as Instruments

Nemesius of Emesa is known only for his unfinished philosophical treatise On the nature of the human being, which has been dated approximately to the final decade of the fourth century CE.¹⁴³ In this treatise, Nemesius sought to provide a comprehensive account of human life, including the elements of corporeal matter, the nature of soul and its relationship to the body, the physiological inner workings of the human being, and the differentiation between fate, necessity, and intention.¹⁴⁴ His underlying focus is the relationship between body and soul, and in the central portion of his treatise he provides a medically- and philosophically-informed description of how the body works in order to illustrate the soul’s movements within it.¹⁴⁵ His first port-of-call is the brain.¹⁴⁶

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¹⁴³ The translations which I provide are adapted from Sharples and van der Eijk 2008. For the history of the text, which was long transmitted under the name of Gregory of Nyssa, see Brown Wicher 1986. Little else has been written on this work (as pointed out already in Domański 1900, xiv), although it does feature occasionally as an example of Galenic knowledge in late antiquity and as the earliest account of ventricular localisation. The dating of the text is based on a reference to Origen which suggests the theologian had not yet been fully condemned (Sharples and van der Eijk 2008, 2, with references). On Nemesius’s relationship to Origen, see Skard 1936.

¹⁴⁴ The fullest account of Nemesius’s view of the soul is to be found in Domański 1900. On Nemesius’s discussion of fate, necessity, and intention, see Streck 2005. Wessel 2010 provides a brief but compelling account of Nemesius’s discussion of the passions in relation to free will.

¹⁴⁵ The most convenient account of Nemesius’s use of sources is the commentary in Sharples and van der Eijk 2008. Domański 1900 provides copious discussion of sources with regard to the soul. Jaeger 1914 is the source of a now discredited argument that Nemesius can be used to
The soul, Nemesius tells us, can be divided into three faculties: thought, memory, and imagination, which includes both perception and mental images. Imagination takes as its instruments (organa) “the foremost cavities of the brain, together with the psychic pneuma inside them, the nerves [deriving] from them soaked with the psychic pneuma, and the apparatus of the sense organs.” Thought, meanwhile, uses as its instruments “the middle cavity of the brain and the psychic pneuma within.” Finally, the instrument of memory “is the rear cavity of the brain, which they call the parenkephalis and the enkrans, and the psychic pneuma within.” This sequence is to be imagined precisely as a sequence, rather than as an unrelated set of instruments: “Imagination, therefore, passes on perceptions to thought, while thought or reasoning sends them on, after receiving and judging them, to memory.”

Following the teaching of Galen that pneuma flows through the ventricles from the front to the rear, Nemesius explains the distribution in terms not only of individual function but of psychological process.

reconstruct the works of the Stoic Posidonius. Further discussion of Nemesius’s engagement with Galen can be found in Skard 1937, 1938, 1939, and 1942.

These, with some variation, were to become standard in medieval and early modern philosophy. For a recent overview, see Perler 2015.

Nem., Nat. hom. 6, 56.2–5: ὀργάνα δὲ αὐτῶν αἱ πρόσθεται τοῦ ἐγκεφάλου κοιλίαι καὶ τὸ ἐν αὐτὰις ψυχικὸν πνεῦμα καὶ τὰ ἐξ αὐτῶν νεῦρα τὰ διάβροχα τῷ ψυχικῷ πνεύματι καὶ ἦ κατασκευὴ τῶν αἰσθητήριων. Psychic pneuma, which I discuss in greater detail in chapter one, is the pneuma or spirit which has been refined within the cerebral ventricles and made suitable for carrying out the functions of the rational soul, such as sensation and voluntary motion.

Nem., Nat. hom. 12, 68.11–3: ὀργανον δὲ καὶ τοῦτον ἡ μέση κοιλία τοῦ ἐγκεφάλου καὶ τὸ ψυχικὸν πνεῦμα τὸ ἐν αὐτῇ.

Thus, although the three faculties are localised in a discrete manner, Nemesius understands the whole as an interlocking system.
It is worth noting, first of all, that although the ventricles or cavities are containers for *pneuma*, their relationship to soul is that of instrument (*organon*) to user. This is in contrast to the language of late medieval texts, such as the famous discussion of Albertus Magnus, who writes that, “Fantasy, indeed, *is placed in* the middle of the middle ventricle of the brain, as if at the centre, between memory and imagination.”¹⁵³ This medieval wording has encouraged description of the ancient model in terms of spatial localisation, even where this is inaccurate.¹⁵⁴ This matters because, as we have seen, spatial localisation was, in the fourth and fifth centuries CE, associated with materialist understandings of soul, and carried with it the implication that soul might be injured by affection of its bodily container to the point of being destroyed at the body’s death.

The importance of injury and destruction to late antique concerns about the body/soul relationship makes the proof with which Nemesius concludes his account particularly striking. He draws, like Gregory, upon phrenitis, but recounts a specific case study borrowed from Galen’s text *On the affected parts*. This work presents a head-to-toe account of diseases caused by local injury or imbalance.¹⁵⁵ In his discussion of the eyes and visual hallucinations, however, Galen digresses to explain that there are in fact many causes of hallucinations, not all of them local to the eye.¹⁵⁶ One such cause was phrenitis—acute delirium combined with fever—which

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¹⁵⁴ See, for example, Frampton 2008, an important and otherwise rigorous work, which writes that Nemesius “places the *sensus communis* and imagination *in* the two anterior (lateral) ventricles” (253). Emphasis added.

¹⁵⁵ Siegel 1976 provides the standard commentary and introduction to Galen’s *On the affected parts*.

¹⁵⁶ In so doing, Galen reinforces a connection between eye and brain which we have already seen at work in Plato and Aristotle, and which remained strong throughout late antiquity.
affected the brain and provoked either disruption of perception or disruption of thought. In order to illustrate this distinction, Galenic narrated the tale of a patient who, left alone in the second storey of a building outside of Rome, had suddenly begun to name various glass implements and then throw them out of the window. He then picked up a young slave who was in the room with him, asked passers-by if they wanted him thrown down also, and when they jokingly assented, did so. This story exemplifies, Galen explained, the possibility that thought might be affected by phrenitis, but perception left intact. This story proved formative in the development of the ventricular model. Nemesius writes as follows:

The most sufficient proof [of ventricular localisation] is that which is gained from the functions of the parts. When the foremost cavities are injured in any way, the senses are impeded, whilst thought remains yet safe. If the middle cavity alone suffers, then thought is overthrown but the sensory organs remain, preserving sensation according to nature. … But when it is the cerebellum which suffers, memory alone is lost, without either sensation or thought receiving any harm.

Following this, Nemesius summarises Galen’s story of the wool-worker, and then concludes:

The functions of each part are impeded (ἐμποδίζεται) by the affections which come upon it: for the animal is damaged with respect to that function which the injured part is designed by nature to enact, such that, if the foot (ποδὸς) is affected then we are impeded (ἐμποδίζομεθα) from walking. For this is the function which the foot possesses.

The comparison of ventricle to foot (ποδὸς) is especially striking because of the pun inherent in the word “impeded” (ἐμποδίζεται). This is also the word used by Isidore in his explanation of the

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158 Nem., *Nat. hom.* 13, 69.24–70.6: ἰκανωτάτη δὲ ἀπόδειξις ἢ ἡ αἱτής τῆς τῶν μορίων ἐνεργείας λαμβανομένη· τῶν μὲν γὰρ προσθίων κοιλιῶν καθ’ ὀντιναδήποτε τρόπον βλαβεισθοῦν αἱ μὲν αἰσθήσεις παραποδίζονται, τὸ δὲ διανοητικὸν ἐτὶ μὲνεί σωζόμενον· τῆς δὲ μέσης κοιλίας μόνης παθοῦσης ἢ μὲν διάνοια σφάλλεται, τὰ δὲ αἰσθητήρια μένει φυλάττοντα τὴν κατὰ φύσιν αἰσθησιν. … τῆς δὲ παρεγκεφαλίδος παθοῦσης ἢ μνήμη μόνη παραπόλλυται, τῆς αἰσθήσεως καὶ τῆς διανοίας εἰς οὐδὲν βλαπτομένων.
159 Nem., *Nat. hom.* 13, 70.24–71.4: ἐκ δὲ τῶν παθῶν τῶν παρακολουθοῦντον ἐκάστῳ μορίῳ τὰ τῆς ἐνεργείας αὐτῶν ἐμποδίζεται· εἰς ἐκείνην γὰρ τὴν ἐνέργειαν καταβλάπτεται τὸ ζῶον, ἣν πέφυκεν ἐνεργεῖν τὸ πεπονθὸς μόριον, ὡς καὶ τοῦ ποδὸς παθόντος εἰς τὸ περιπατεῖν ἐμποδιζόμεθα· ταύτην γὰρ ὁ ποῦς ἔχει τὴν ἐνέργειαν.
soul as captain of a sinking ship: “Now, this shows not that the soul is not immortal, but that its 
activities are impeded (ἐμποδίζεσθαι).” Here, the metaphor of obstructed movement hearkens 
back to the soul/captain as it moves through the body of the ship, but also looks forward to the 
more abstract “impediment” of the musician in the broken or sea-sodden lyre.

Nemesius’s use of “impediment,” in conjunction with Isidore’s musician and captain, 
also allows his reader some sense of how to relate to the soul: Just as the musician or captain is 
impeded from managing their respective instruments, so the cognitive functions are impeded 
from operating by injury to the brain, and so we are impeded from walking by injury to the foot. 
Regardless of appearances (for example, delirium), impediment of reason through injury to the 
brain is in fact no more destructive to the soul than injury to the foot; it simply impedes the 
soul’s rational activities.

Through his language of impediment and instrument, Nemesius constructs a model which 
steers clear of Gregory’s concern that localisation must entail the confinement of soul within a 
bodily space; he further addresses the particular concern that both Isidore and Gregory would 
raise with regard to individual morality: Damage to brain membranes, whether through 
inflammation or humoral affection, could not injure the moral health of the subject. The man 
who threw the slave out of the window was unhealthy only in his body, and not in his soul.161 

ii. Posidonius: A Medical Perspective

A central question remains as to whether Nemesius introduced “instrumental” terminology into 
his account of “ventricular localisation,” or if he borrowed it from an earlier iteration. On the one 

160 Isid. Pel., Ep. 4.125 (PG 79, 1204A): οὐ γὰρ τὸ μῆ εἶναι ψυχῆν ἀθάνατον τὸτε δείκνυσιν, 
ἀλλὰ το ἐμποδίζεσθαι αὐτῆς τὰς ἐνεργείας.
161 But see my complication of this in chapter four.
hand, Nemesius is known to have copied and summarised chunks of material from earlier authorities elsewhere in his text.\textsuperscript{162} The probable medical source for his account of ventricular localisation is Posidionius, a fourth-century physician whose work survives only in later excerpts.\textsuperscript{163} On the other hand, the medical account of Posidionius, summarised by the sixth-century medical encyclopedist Aëtius of Amida, does not use the word \textit{organon} to describe the brain cavities. This summary appears toward the beginning of Aëtius’s sixth book, which itself is dedicated to diseases of the head.

About phrenitis, from the writings of Posidionius. Phrenitis is the inflammation of the meninges around the brain, bringing together with it acute fever, frenzy, and derangement of thought. … There are many species of phrenitis, but these three are the most important: Either the patient is injured with regard to the imagination alone, their reason and memory being preserved; or the faculty of reason alone is harmed, imagination and memory remaining safe; or the harm is to the imagination and reason, while memory is unharmed. But if the memory is destroyed through fever, reason and imagination are destroyed together with it. If the front portion of the brain is injured, imagination alone is damaged; if the middle cavity of the brain is injured, aberration of thought occurs; but if the rear of the brain is injured at the occiput, memory is destroyed, and with it the other two faculties also. … It is appropriate, therefore, to apply treatment most of all to the portion that has been the more injured, but not however to neglect the others.\textsuperscript{164}

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\item \textsuperscript{162} See Sharples and van der Eijk 2008, 18–32 for a discussion of Nemesius’s sources; see also fn145, above.
\item \textsuperscript{163} Posidionius is best known through the description of his approach to mental illnesses in the fourth-century ecclesial history of Philostorgius, summarised by Photius (Philostorg., \textit{HE} 8.10).
\item \textsuperscript{164} Aët. Amid., \textit{Med. coll.} 6.2.1–3, 6–17, 21–3: \textit{περὶ φρενιτίδος ἐκ τῶν Ποσειδωνίου. ἢ φρενῖτις φλεγμονῆ ἐστὶ τὸν περὶ τὸν ἐγκέφαλον μηνύγγον μετὰ πυρετοῦ ὀξέος παρακοπῆν καὶ παραφορὰν τῆς διανοίας ἐπιφέρουσα. … διαφορὰ δὲ τῆς φρενιτίδος πλείους μὲν, αἱ δὲ κυριωτάται τρεῖς: ἢ γὰρ τὸ φανταστικὸν μὸνον εἰσὶ βεβλαμμένοι, σφέται δὲ αὐτοῖς τὸ λογιστικὸν καὶ ἢ μνήμη, ἢ τὸ λογιστικὸν μὸνον ἢδικήται, σφέται δὲ τὸ φανταστικὸν καὶ ἢ μνήμη, ἢ καὶ τὸν φανταστικὸν καὶ τὸν λογιστικὸν ἢδικήται. µὴ δὲ ἢ μνήμη. µηνής δὲ ὀπολλυμένης ἐπὶ τῶν πυρετικῶν νοσημάτων συναπόλλυται ὡς ἐπίπαν καὶ τὸ λογιστικὸν καὶ τὸ φανταστικὸν. τοῦ µὲν ἐμπροσθίου μέρους τοῦ ἐγκέφαλου βλαβέντος τὸ φανταστικὸν µὸνον ἢδικήται, τῆς δὲ µέσης κοιλίας τοῦ ἐγκέφαλου βλαβέσθησα παρατροπὴ γίγνεται τοῦ λογιστικοῦ, τοῦ δὲ κατὰ τὸ ἱνὸν ὀπισθίου ἐγκέφαλου βλαβέντος ἀπόλλυται τὸ µηνήμεντον, σὺν αὐτῷ δὲ ὡς ἐπίπαν καὶ τὰ ἔτερα δύο. … προσήκει τοῖνυν τῷ µᾶλλον ἢδικηµένῳ µέρει, µᾶλλον τὰ βοηθῆµατα προσάγειν, µὴ µέντοι µηδὲ τῶν ἄλλων αµελεῖν.
Aëtius’s introduction (“from the writings of Posidonius”) reflects the anthologising approach of his work, and suggests that, even more so than in the case of the anonymous borrowings and adaptations of Nemesius, a word-for-word appropriation might be expected.\footnote{This is not intended as a dismissal of Aëtius’s intellectual contribution to medical history. See Nutton 1984, esp. 4 for a critique of the view that the authors of such secondary genres were “dumb copyists.” As noted in chapter one, fn5, much recent scholarship on late antique medicine emphasises the active role that authors of encyclopedias, summaries, and compilations played in selecting, arranging, and paraphrasing their sources.} It is striking, therefore, that Posidonius does not describe in any detail the relationship between ventricle and dysfunction (much less ventricle and function): Instead, he writes simply that injury to the ventricles correlates to and perhaps causes impairment of function, such that the appropriate ventricle must be treated in order for the function to be regained. Notably absent is any mention of an “instrument.”

Posidonius does not, it is important to add, imply spatial localisation or containment of the soul or its faculties.\footnote{Modern summaries tend to suggest otherwise. See, for example, Frampton 2008, 257: “Posidonius Byzantius thus localizes the psychical operations to specific sub-locations within the brain. He even places one of them, the faculty of reasoning, in the middle ventricle.”} Rather, according to Aëtius’s recension at least, he is not interested in theorising the body/soul relationship at all. His primary concern, first of all, is to distinguish the kinds of phrenitis according to symptom profile; he then introduces an aetiology for each kind, directed most immediately toward an explanation of therapeutics. It is important to know that different kinds of phrenitis are distributed amongst the ventricles, in order to know where treatment must be applied.

Whilst it cannot be guaranteed that Posidonius did not use the term \textit{organon} in his own account of the ventricles, Aëtius’s version suggests that he did not. The lack of explicit theorisation of how the soul works through the ventricles is motivated by the therapeutic...
orientation of the text and its author. Strikingly, concern to articulate an instrumental relationship between bodily parts, their functions, and the soul appears as a feature not of medical, but of theological explanations of the brain in late antiquity.

iii. Augustine of Hippo: Ventrices as Sources

The third late antique source on “ventricular localisation” was composed by another bishop, this time from the Latin-speaking West, that is, from North Africa. In the early fifth century CE, Augustine of Hippo (354–430 CE) described a version of “ventricular localisation” in his *Literal commentary on Genesis*, which was written in order to demonstrate that a literal reading of the Hebrew scriptures was both possible and desirable.\textsuperscript{167} Although Augustine is typically cited last and most succinctly in discussions of the theory, his was an influential account, being copied by the sixth-century Spanish encyclopedist Isidore of Seville, whose work was immensely popular in the medieval period.\textsuperscript{168} The reason for which Augustine is often marginal to discussions of “ventricular localisation” is his variation of what was to later become the conventional model. Augustine presents slightly different faculties in a different order within three ventricles of the brain. Since the version of Nemesius and Posidonius was later to become standard, Augustine’s account is usually presented as an aberration.\textsuperscript{169}

This section will make two key arguments: First, it is both necessary and illuminating to read Augustine’s version on its own terms, rather than simply as a “deviation” from an orthodox model. Second, Augustine, like Nemesius, presents the ventricles as instruments, but with two

\textsuperscript{167} Aug., *Gn. Litt* 7.17–9. All translations of Augustine my own, except where otherwise noted.

\textsuperscript{168} Isid., *Diff.* 2.17.47–50 (Sharpe 1964). Frampton 2008, 298–300; Lockett 2011. See my brief discussion of this material in chapter one.

\textsuperscript{169} Frampton 2008, 257: “an interesting variant”; C. Smith 2014, 6: “a different and perhaps yet more fanciful schematic than the usual tripartite system.”
important differences: (1) The “instruments” are also “sources” for the distribution of *pneuma*, and (2) the “instruments” are defined as “sources” of the *pneuma* in order to distinguish them not from containers (i.e., of a material soul), but rather from the parts of the soul. Augustine’s description of the ventricles therefore complicates the sketch I have drawn out of the intersection of “ventricular localisation” with current debates about the body/soul relationship. What Augustine’s discussion reiterates, nonetheless, is that identifying body parts as “instruments” was a key strategy in articulating a separate, incorporeal soul.

Augustine wrote a number of commentaries on Genesis.\textsuperscript{170} One reason for this is that he was experimenting with a range of interpretative possibilities, which could be roughly categorised as “allegorical” and “literal.”\textsuperscript{171} Another reason was that interpretation of Genesis could provide important material for doctrinal disputes, especially regarding cosmology, christology, and the relation between human beings and the Christian god.\textsuperscript{172} Falling toward the end of Augustine’s career, the *Literal commentary on Genesis* was intended to provide a comprehensive account of Genesis in “literal” terms. To a significant extent, this meant invoking the authority of natural philosophers and medical scientists.\textsuperscript{173}

The creation of the human soul is the focus of book seven, which explicates a single verse, Genesis 2:7: “And God fashioned the man with dust from the earth, and puffed into his face the puff of life, and the man was made into a living soul.”\textsuperscript{174} Whilst Augustine insists that the “puff of life” is an *action* rather than a substance, he clearly has *pneuma* (Gk.) or *spiritus*

\textsuperscript{170} Teske 1991.
\textsuperscript{171} See my discussion of allegorical and literal interpretation in the introduction, part two.
\textsuperscript{172} Runia 1992.
\textsuperscript{173} For Augustine’s engagement with contemporaneous medical and biological science, see Keenan 1936 and 1939.
(Lat.) in mind as a resonance in this text. After running through various accounts of the nature of soul, he concludes that it must be understood as incorporeal, and therefore not composed of any bodily element(s), but—and this is the crucial part—that it moves the earthly body through the medium of the lighter elements, air and fire.\textsuperscript{175} In order to articulate this medium, he draws upon medical doctrine of a fiery air which pours from the brain into narrow channels to the sensory organs, thereby animating the whole. Whilst he does not name spiritus here, it is clearly to this substance that he refers.\textsuperscript{176}

That this “fiery air” is to be identified with the “puff of life” is revealed through Augustine’s explanation of why god puffs life “into the face” of the human body: “The anterior part of the brain, whence all the senses have their source, is located in the forehead, and in the face are also those ‘instruments’ of sensation.”\textsuperscript{177} The life-bringing breath thus proceeds from the face backward into the rear of the skull (posterior), which is the source of movement (motus), “just as counsel precedes action.”\textsuperscript{178} After clarifying precisely how “action” follows “counsel”—not instantaneously, but via the storage and retrieval of information—Augustine outlines a ventricular model:

Therefore, three ventricles of the brain are shown to exist: one anterior toward the face, from which is all sensation; another posterior toward the neck, from which there is all movement; and a third between the two, in which they show that memory flourishes.\textsuperscript{179}

\textsuperscript{175} Thus, Augustine presents a Stoic understanding of pneuma. See chapter one, part three.
\textsuperscript{176} Augustine discusses the various meanings of spiritus in Gn. litt. 12.
\textsuperscript{177} Aug., Gn. litt. 7.17: pars cerebri anterior, unde sensus omnes distribuuntur, ad frontem conlocata est atque in facie sunt ipsa uelut organa sentiendi.
\textsuperscript{178} Aug., Gn. litt. 7.18: sicut consilium praecedit actionem.
\textsuperscript{179} Aug., Gn. litt. 7.18: ideo tres tamquam ventriculi cerebri demonstrantur: unus anterior ad faciem, a quo sensus omnis; alter posterior ad cervicem, a quo motus omnis; tertius inter utrumque, in quo memoriam uigere demonstrant.
The “puff of life” therefore provides a model for the circulation of psychic pneuma through the ventricles, akin to that proposed by Galen in his treatise *On the usefulness of the parts*.

Augustine’s model of “ventricular localisation” has been dismissed as incorrect. This is because he associates memory with the middle ventricle, rather than with the rear, and introduces voluntary motion as the activity of the rear ventricle, leaving thought to float free from the parts within the brain. In these respects, however, his account actually fits Galen’s understanding of the brain more closely than does the model proposed by Nemesius and Posidonius. As we saw in chapter one, Galen differentiated the nerves according to their function: Sensitive nerves are soft and are mostly rooted in the front of the brain; motor nerves, meanwhile, were harder and more durable, since they needed to travel throughout the body to reach distant muscles, and were generally rooted in the rear of the brain. Whilst Galen did not develop a theory of ventricular localisation, his arrangement of the nerves was highly suggestive, and surely lies behind Augustine’s localisation of voluntary motion in the fourth ventricle.

Augustine, furthermore, presents a clear psychological explanation for why the faculties should be arranged in the order that he sets out: Whilst Nemesius explains the sequence of ventricles by breaking down the cognitive process into perception, thought, and retention of thought (memory), Augustine presents cognitive processes as oriented toward action, such that perception and “counsel” are equated, leading via memory (necessary because no action is simultaneous with its counsel) to movement.

Finally, Augustine disembodies the faculty of rational thought. We can understand this best if we read it in light of the concern which Lactantius and Gregory demonstrate to create a

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180 See chapter one.
181 Green 2003, 140.
space free from the distractions and instruments of the body for the rational principle or mind to perform its own, incorporeal activity of thought and contemplation. By narrowing down the functions of the ventricles to those activities which more obviously require corporeal instruments—either the nerves (for sensorimotor function) or the storage of information (for memory)—Augustine frees up thought as an aspect of soul not reliant upon the instruments of the body.

That soul has its own capacities apart from the body is further reinforced by the proof which Augustine offers for the ventricular model. Like Nemesius and Posidonius, he invokes the correlation between local injury and functional impairment. According to medical experts, he explains, the “duties” (officia) of individual parts fail when the parts themselves are “struck by some illness or injury” (aliquo adfectae morbo uel uitio), whilst a cure might be effected through repair of the damaged limb.\(^{182}\) If this language of “duties” sounds suspiciously anthropomorphic—officia is the term famously used by Cicero, and later by Augustine’s mentor Ambrose, to describe the responsibilities of human individuals—then Augustine is quick to stress that the parts are not to be equated with their animate powers: “But the soul acts upon these [parts] as if upon instruments (organis), and is not [one] of them; rather, it animates and rules all.”\(^{183}\) Here we find, once again, emphasis upon the ventricles as “instruments” (organis, transliterated from the Greek). Augustine’s concern is not, however, that his reader might suspect the confinement of a material soul within the ventricles, but rather that the soul itself might be considered unnecessary, with its functions distributed to the various parts. This is an anxiety more in line with Isidore’s contemporaneous refutation of the temperamentental paradigm, albeit

\(^{182}\) Aug., Gn. litt. 7.18.
\(^{183}\) Aug., Gn. litt. 7.18: sed anima in istis tamquam in organis agit, nihil horum est ipsa; sed uiuificat et regit omnia.
focused upon reduction to bodily instruments rather than to bodily qualities and humours. In asserting the soul as a ruling and animating power, in contrast to the “instrumental” body, Augustine demonstrates to his readers why it is necessary that rational thought remain a property entirely of the soul.

Conclusion

This section has argued that the two theological witnesses to ventricular localisation in late antiquity emphasised the “instrumental” aspect of the theory over “containment.” This distinction may not have been present in prior medical presentation of the theory, although it is impossible to say for sure. For theologians, the insistence that the ventricles were “instruments” and not “containers” resonated with contemporaneous Christian concern about models of the body/soul relationship which threaten to trap or imprison the soul.

The importance of this distinction for the conceptual history of the brain is twofold. First, it reveals the influence of theological concerns upon the presentation of medical models of the brain. Second, it prompts us to note that in the later medieval period there was a shift over time away from the instrumental model and toward the language of containment that we find in Albertus Magnus. What prompted that shift deserves further study. We might speculate, however, that it had something to do with the changing stakes around the theorisation of the soul, and the stabilisation of the body/soul relationship within the Christian worldview.

Conclusion

The brain plays an important role in late antique debate about the body/soul relationship. As the site at which the rational soul engages parts of the body, it is imagined and transformed in
accordance with the modes in which such engagement is thought possible. In this chapter, I have argued that the model of “ventricular localisation” was articulated by late antique theologians in terms which responded closely to contemporaneous concerns about the body/soul relationship, in particular regarding the autonomy of soul in moral and existential terms. Yet, the story is not simply one of resolution. The brain has also appeared as a locus in which paradoxes and tensions which characterise the body/soul relationship erupt.

If the brain is the instrument of rational thought, and the brain becomes dysfunctional through injury or disease, does the rational soul continue to have rational thought (a view which suggests ontological separability) or does it remain merely as a latent capacity, with the activity of reason itself demanding the participation of the body? Again, if the brain is the instrument of governance and control, does behavioural deviance produced by an unhealthy brain compromise the integrity of the soul as governor of the body as much as would, for example, the soul of a healthy body yielding to impulses of desire. And if brain injury or disease neutralises the responsibility of the soul in governing the body, what is its explanatory scope? These are the questions which drive the following chapters.
III.

The Care of the Brain in Early Christianity

The brain is rarely mentioned in accounts of Christian asceticism, self-care, or psychic therapeutics. Yet, as we shall see in this chapter, the brain was central to ascetic discourse. As the organ positioned on the boundary between body and soul and a participant in both spheres, the brain could mediate bodily damage to the soul. The care of brain thus became a central concern to preachers articulating the practices of self-care appropriate for their congregations.

The corporeal turn in late antique studies has generated many illuminating studies on ascetic practices as a part of philosophical “care of the self.” It has been broadly recognised across these studies that ascetic practices, especially dietary, were not merely psychological or symbolic, but were intended to have physiological effects, such as the dampening of the passions, above all, sexual desire. As guides in such care, preachers identified themselves, like

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1 This chapter elaborates ideas and readings that I first explored in an article forthcoming in Studia Patristica (Wright forthcoming b).
2 Although see now de Wet forthcoming, which notes that gluttony affects the brain in the homilies of John Chrysostom. De Wet and I examine several of the same passages, although from quite different angles. De Wet’s goal is to demonstrate through Chrysostom’s approach to gluttony that to be a physician of the soul was to be a physician of the body, since pneuma (which de Wet considers to be identical with soul in Chrysostom’s corpus) is material. My own approach is to investigate Chrysostom’s rhetoric around the brain and its vulnerabilities as a justification for his intervention in the bodily practices of his congregants.
4 T. Shaw 1998, 63 (on medical teachings) and 99 (on Jerome). Biomedical observations about the effects of starvation on women’s menstrual cycles are sometimes cited in connection with this point: See, for example, Rousselle 1988 [1983], 176, esp. fn138.
philosophers, as “physicians of the soul.” Their use of medical language was motivated by a desire to imitate Christus medicus in their healing of sick souls.

This chapter focuses almost, although not entirely, on the Greco-Syrian preacher John Chrysostom (c. 347–407 CE), whose extant homilies and treatises constitute the largest surviving corpus by a Greek-speaking author of the early church. I will argue that Chrysostom elaborated a rhetoric of cerebral vulnerability, that is, a dual emphasis upon the fragility of the brain, on the one hand, and the importance of the brain as psychic instrument, on the other. This rhetoric was employed in various ways. First, it helped to explain how care of the body could affect the health of the soul. Second, the physical vulnerability of the brain embodied a teleological weakness in the construction of the human as a rational and autonomous being—that is, the anatomical and physiological conditions necessary for reason make the subject physically vulnerable. Third, the political resonances of the brain enabled preachers to insert themselves not only as physicians of the individual body, but also as physicians attending to the political “body” as a whole.

Individual spiritual health, as we shall see, was dependent not only upon one’s own cerebral hygiene, but also upon the self-care practised by others. In this way, preachers used the medical idea of the “brain,” together with its attendant characteristics and weaknesses, to forge a vision of a communal Christian body, bound by specific practices of bodily and spiritual self-care.

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5 The seminal study on psychic therapy in ancient philosophy is Nussbaum 1994. See also the important work of Gill 2013. Wendy Mayer has led the way in re-imagining John Chrysostom as a “physician of the soul,” through the lens of ancient “medico-philosophical psychic therapy” (Mayer 2015a, 145–46). See also the discussion of medicalising language in Laird 2013: 129–49.

6 For the metaphor of “Christ the physician,” see chapter one, fn9.

7 Chrysostom’s corpus covers eighteen volumes (47–64), or just over ten percent, of the Patrologia Graeca, which is 161 volumes in total, and which represents Greek Christian texts from the first century to 1473. Augustine occupies a similar position in the Latin corpus; we shall consider his approach to the vulnerability of the brain in chapter five.
1. Rhetoric as a Source for the Brain

So far, this dissertation has encountered chiefly philosophical and medical discussions of the brain. While this approach provides a foundation for exploring the brain as an object of knowledge and theorisation in late antiquity, it offers little sense of how the brain was conceptualised outside of technical and elite discourses. In order to explore more widespread cultural understandings of the relationship between care of the brain and the health of the soul, it is necessary to turn to texts which were designed to reach a larger and more diverse audience—that is, sermons and homilies. Given, however, that most sermons and homilies do not have as their goal the theorisation of the brain, it is necessary to lay out a framework for reading these texts as sources for conceptual or intellectual history. How can homiletic literature inform us about late antique understandings and experiences of the brain?

8 The twentieth and twenty-first centuries have seen a steady interest in the engagement of late antique Christian intellectuals with ancient science (see, especially, chapter one, fn7–8). While a recent surge of scholarship has focused upon the appropriation of medical discourse in Christian texts (see Introduction, fn18), there has been little explicit reflection on the question of how the different genres of late antique literature variously shaped and transmitted ideas drawn from technical literature. For this, we might turn to the more comprehensively theorised body of scholarship on “popular science” in modernity. See especially Brok 2006, and the essays in Isis 100.2 (2009), which is dedicated to this theme. For discussion of how theoretical models and explanations function across popular scientific and religious contexts, I have found Polanyi 1973 particularly useful. (Note, though, that Polanyi’s account of the “defeat” of science by Augustinianism operates with a distinction between religion and science that is now outdated—see, in particular, Cunningham 1988, its contestation in Dear 2001, and the historiographical review of this question in Fancy 2013.) Cooter 1984, while dealing with a mixture of popular, including popular religious, accounts of the brain in the nineteenth century, does not directly tackle the question of how genre shapes the presentation of scientific discourse, but is interested rather in the social function of scientific discourse itself.

9 See Allen and Cunningham 1998, 2 for the distinction made from the seventh century onward between homilies, which were relatively informal and spontaneous, and sermons, which were delivered at festal occasions. In late antique scholarship, “sermon” and “homily” are used sometimes used interchangeably, or distinguished according to language—Augustine preaches sermons in Latin, while Chrysostom delivers homilies in Greek.
i. Social Function

Late antique Christian rhetoric is an important and, in the ancient world, unprecedented source for social and intellectual history; yet it is only in recent decades that late antique historians have begun to develop methods of interpretation which go further than extracting details as representative of social life.¹⁰ One reason for this is that sermons and homilies, like the literature of the Second Sophistic (prior to its recuperation by scholars such as Maud Gleason and Tim Whitmarsh), have been considered, in the words of Wendy Mayer, “‘popular’, and therefore trivial.”¹¹ Even those scholars who have made arguments in favour of a late antique “third sophistic” have disputed the question of whether this new designation should include Christian oratory.¹² This view of homiletic literature is nourished, of course, by the preachers’ own

¹⁰ B. Shaw 2011, 409: “The preacher’s sermon is one of those mundane things that is so ordinary in our experience that its invention and impact has often flown beneath the level of our attention.” See Shaw’s discussion of sermons as a source for social history in ibid., 416–21. Mayer 2008a offers a useful historiography of the homiletic genre. See Mayer 2008a for a critique of the existing model of interpretation. New approaches are represented by the following: Maxwell 2006; Sandwell 2007; Kolbet 2010, esp. 1–18; Sandwell 2011. Cunningham and Allen 1998, 1–20 provides a systematic account of the methodological challenges involved in studying sermons and homilies, including, for example, the difficulty of identifying the date and provenance of most texts with any precision.

¹¹ Mayer 2008a, 567. Cf. Kolbet 2010, 4. Averil Cameron has been an important dissenter in arguments about the “decline” of oratory in late antique Christianity. See Cameron 1991, 84: “The context for the development of an ostensive Christian discourse was thus more favorable than the proponents of the rhetoric of decline would care to admit. Not only did Christian preachers find conditions in which oratory was valued and admired, but they also deliberately addressed themselves to a much wider audience than the pagan sophists.” On the recuperation of the Second Sophistic: Gleason 1995; Schmitz 1997; Whitmarsh 2005; Borg 2004.

¹² Pernot 2000 introduced the “Third Sophistic” to distinguish fourth-century oratory from the Second Sophistic, but restricts this new label to pagan authors (271). Quiroga 2007 argues that the intellectual and political changes heralded by imperial Christianity were in fact central to this “third sophistic” movement. Van Hoof 2010 suggests that “Third Sophistic” is a misnomer, obscuring the continuities between rhetoric of the second and third centuries, and that of the fourth. On Christian preaching as a form of rhetoric, see the seminal work of Brown 1992. Maxwell 2006, 11–41 explores the relationship between Christian preaching and Greco-Roman philosophical oratory, arguing ultimately that Christian preaching has its roots in popular moral
insistence that they favour the “plain style” of scripture over the “sophisticated” rhetoric of contemporary oratory.\textsuperscript{13}

Another reason for the lack of attention to Christian homiletics is that this was not a genre designed for systematic exploration of original theological or philosophical positions.\textsuperscript{14} This is not to say that homilies did not contain theological or philosophical material—quite the reverse: These texts were a key means of instructing the wider population in Christian doctrine.\textsuperscript{15} Rather, sermons repeated and condensed theological and philosophical arguments made at greater length elsewhere, for the traditional rhetorical purposes of persuasion, instruction, and exhortation.\textsuperscript{16}

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\textsuperscript{13} For an example, see Joh. Chrys., \textit{Hom. in Joh.} 2 (PG 59, 29–37), which argues that the author of \textit{John} was a humble fisherman, whose simple language stands in contrast to the florid constructions of those trained as orators. This was a widely recognised \textit{topos}. See the remarks of Maxwell 2006, 11, 35–36. Auski 1995 provides an extended discussion. Urbano 2013, 32–7 situates this \textit{topos} within the paradox of the rejection of \textit{paideia} by highly-educated Christians.

\textsuperscript{14} Kolbet 2010, 4–5: “they [sc. sermons] can lack the precision necessary for them to be that useful to historians, philosophers, or theologians.” See also Cunningham and Allen 1998, 2, which describes homilies as typically “informal, unstructured exegetical discussions of scriptural texts.”

\textsuperscript{15} Rylaarsdam 2014 emphasises the pedagogical framework of John Chrysostom’s sermons. Cf. Sandwell 2014, 1: “It was these preachers who taught ordinary, often illiterate, audiences about biblical texts, the key doctrines of the Christian faith and Christian morality and ways of living.” This is particularly clear with regard to catechetical sermons (Harmless 1995).

\textsuperscript{16} Cameron 1991, 160: “[Homiletics] was after all no more than a reworking in more palatable and immediate terms of the theological language employed in the Christological and other disputes of the fourth century and later.” See also Rylaarsdam 2014, 56: “Adaptability was central to these methods [sc. of teaching through sermons], for the philosopher needed to discern the types of discourse to fit various souls and the arguments and ordering and timing of that discourse.” Cf. Maxwell 2006, 38–39, for the bishop Amphilochius’s popular presentation of the
The goal of most sermons was inculcation of a particular affect, practice, or belief—that is, as the construction of a communal Christian identity, in particular through the inculcation of certain beliefs and, tied to those beliefs, specific practices of self-care.\textsuperscript{17} This meant that pedagogical and persuasive strategies were prioritised over systematic exposition, which, when it occurred, was in any case disrupted by engagement with the immediate demands and mood of the particular audience.\textsuperscript{18} Sermons were, as Peter Brown has written, “often inconclusive dialogues” between a rhetorically-trained preacher and an audience trained in public oration as a primary means not only of learning, but also of political engagement and communication.\textsuperscript{19}

Consequently, the search for a coherent account of any philosophical or theological question—including the role of the brain in relation to body and soul—must be disappointed. Sermons, as Quiroga cogently argues, are to be interpreted “not as product but as process.”\textsuperscript{20}

The social and pedagogical function of sermons makes it challenging to study them as literary, philosophical, or theological works. Yet, this function is precisely the reason why they constitute fundamental sources for popular intellectual history. Through homilies, as Mayer has

\textsuperscript{17} On constructions of identity through rhetoric, see the introductory remarks of Whitmarsh 2005, 1: “Oratory was not just a gentle pastime of the rich: it was one of the primary means that Greek culture of the period, constrained as it was by Roman rule, had to explore issues of identity, society, family, and power.” On the forging of local community identities, see also Maxwell 2006, 11: “In Late Antiquity, Christian preachers attempted to shape entire communities according to moral ideals traditionally associated with philosophers and their circles.” See also Quiroga 2007, 32, and Sandwell 2007, 11–13.

\textsuperscript{18} B. Shaw 2011, 410: “To succeed, the preacher had to be an attentive listener, carefully attuned to his audience.” See also ibid., 415, with citations in fn33.

\textsuperscript{19} Brown 2000 [1967], 446. Cf. Sandwell 2014, 2: “One way to see the history of Christianity is thus as a history of the tension between Christian preachers, who were trying to impose a certain vision of what it was to be Christian, on the one hand, and audiences of ordinary lay Christians, on the other, who received the lessons being taught to them in divergent and sometimes unexpected ways.”

\textsuperscript{20} Quiroga 2007.
written, we can (and need) to “trace more thoroughly the development of discourse on topics such as authority, poverty, wealth, marriage, and virginity”—and, one might add, the body—“across regions and through time, with an awareness that the choice of exempla or topic has as much to say as the exempla and topic themselves.”

That is, what preachers chose to talk about—their selective strategies—can shed light, albeit indirectly, on the expectations and thoughtworld of their audiences.

ii. Audience

In homiletic references to the brain, we glimpse the traces of what proved compelling in an environment saturated by rhetorical display. Christianity was, at this period, an immersive experience, fuelled above all by public speech. Preaching happened daily—sometimes several times per day—in late antique urban churches, with preachers and congregants alike moving between different ecclesial contexts. Those speeches that survived were either composed (successfully) for circulation, or were written down by stenographers at the moment of

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21 Mayer 2008a, 568.
22 Sandwell 2014, 2 emphasises that “we have much better access to the views of preachers than we do to those of their audiences.” Cf. Rylaarsdam 2014, which draws upon Cameron 1991 to argue that “[p]laying attention to the theology and rhetoric of homilies reveals how the worldview of listeners was constituted.”
23 Maxwell 2006, 42–64 surveys the various contexts for public performance in late antiquity, and the influence these traditions had on the development of Christian preaching.
24 Sandwell 2014, 1: “In the context of the Graeco-Roman world, where religions were more concerned with religious practice and ritual than with verbal expressions of faith, Christianity’s use of the spoken and written word to spread its message was one of its defining characteristics and allowed it to sustain some degree of unification while proliferating across the Roman empire.”
Delivered to large and often diverse audiences, sermons functioned as channels (and also as filters) through which the knowledge and expertise of an elite education might reach a largely illiterate audience. For these audiences, as for most inhabitants of the Roman Empire, public oratory provided a central means of education. While the lives and thoughts of non-elite individuals in antiquity are for the most part lost from view, the rhetoric which was composed for their education can yield insights into what was thinkable and speakable, especially with regard to those objects and concerns which were common to all—the human body, its soul, the brain and the care of all three.

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26 Mayer 2008a, 571–572 raises the question of how we are to discern the “oral” nature of late antique sermons, given that those which survived were in any case written down and also edited. See also Cunningham and Allen 1998, 11. Brown 2000 (1968), 432, suggesting that Augustine’s sermons were transcribed by “the stenographers of his admirers.” B. Shaw 2011, 416 notes the use of stenographers also. 

27 B. Shaw 2011, 410, emphasising preachers as a source of religious knowledge: “It was at the critical juncture between the Holy Scriptures of the faith on the one hand and their transmission and interpretation to large numbers on the other that the figure of the preacher was situated.” Cf. ibid., 412–13. See Mayer 2000 and Maxwell 2006, 65–87 for extensive reviews of the scholarship and a fresh consideration of the question of congregational composition. Key articles include MacMullen 1989 and Rousseau 1997. See also Sandwell 2007, 11–16. B. Shaw 2011, 427–33 discusses audience composition in late antique North Africa, with particular attention to the question of language barriers. While controversy remains regarding the diversity of late antique congregations, this controversy is grounded in variation within the chief evidence available—that of the sermons themselves. Sometimes preachers seem to assume the presence of marginal groups, such as slaves, women, children, and the poor. At other times, preachers address themselves only to the dominant social group—free men who were self-sufficient or wealthy. This variation suggests that the demographic of congregations was not monolithic.

28 Cameron 1991, 160: “Week by week, preachers of all levels of sophistication expounded the familiar themes and scriptural passages to their congregations, drawing according to their abilities upon both learned and popular tradition.” Sandwell 2011 usefully compares the pedagogical approaches of John Chrysostom and Basil of Caesarea with regard to audiences of diverse educational backgrounds.

29 Horden 2009, 277: “as Peter Brown has taught us throughout his oeuvre, evidence of what was thinkable can be as illuminating, and as extensive in its ramifications, as evidence of what happened.”
It is necessary to examine homiletic reference to the brain within this framework, in order to elucidate the role it played in establishing popular understandings of bodily self-care and its relationship to psychic health. In these texts, we shall not find a coherent account of the importance and vulnerability of the brain. No sermon is interested in the brain for its own sake, as might be an anthropological treatise, such as Nemesius’s *On the nature of the human being*, or Gregory of Nyssa’s *On the constitution of the human being*. When the brain appears in sermons, rather, it usually serves to illustrate a theological or pastoral argument, such as the need for sobriety, the danger of heterodox preachers, or the relationship between Christ and the church. It is these occasional references that we must mine in order to develop a broad sense of what was thinkable with regard to the brain in late antiquity, and also in what ways the brain lent itself to preachers’ rhetorical and practical goals.

### iii. Sources

This chapter will focus particularly on the homilies of the Greco-Syrian preacher John Chrysostom. In part, this is because Chrysostom’s extant corpus far exceeds that of any contemporary Greek author. It is also because Chrysostom is most ambitious and far-ranging in both his grasp of medical knowledge about the brain, and his figurative elaboration upon it. Furthermore, Chrysostom’s sermons were superlatively influential: This is, indeed, why so many have survived (and why so many sermons by now anonymous preachers were attributed to his

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30 See fn6, above.
31 Wendy Mayer is currently working on a study of medical language in Chrysostom’s corpus. See, for now, Mayer 2015a; 2015b; 2015c.
name).\textsuperscript{32} Even as late as 1869, the London preacher Archibald G. Brown referred to Chrysostom as his authority that pride is “nothing less than a spiritual drunkenness,” which “flies as wine to the brain.”\textsuperscript{33}

Yet, this is not a story merely about Chrysostom and his influence. While it is impossible to say whether the quantity of Chrysostom’s references to the brain offer a proportionate representation of the homilies and sermons lost from his contemporaries, Chrysostom does offer a representative sample of the ways in which ideas about the brain might be deployed. For example, a common motif, as noted by Archibald G. Brown, was the medical idea that the fumes of alcohol rise from the stomach into the brain, and so disturb reason and the senses. This motif is developed at length in one of Chrysostom’s homilies, and is mentioned in a homily spuriously attributed to him.\textsuperscript{34} As we shall see, it appears also in the works of preachers such as Basil of Caesarea, Asterius of Amasea, and Augustine of Hippo. Chrysostom’s more extended account reflects assumptions present in medical, philosophical, epistolary, and homiletic contexts.

Chrysostom represents not only the \textit{kinds} of reference fourth- and fifth-century preachers might make to the brain, but also the particular interest that his contemporaries had in this organ. The brain is not widely mentioned in Greek rhetorical sources prior to the fourth century. Even Libanius—famed teacher of rhetoric at Antioch, and supposedly the teacher of both Chrysostom

\begin{itemize}
\item \textsuperscript{32} On the problem of discerning sermons spuriously attributed to Chrysostom, see Mayer 2005, 14–18.
\item \textsuperscript{34} The lengthy discussion is found in Joh. Chrys., \textit{In 1 Tim. hom.} 13 (PG 62, 567.60–570.64). The brief mention occurs in \textit{De prec. [Sp.]} (PG 64, 461.37–44).
\end{itemize}
and Basil of Caesarea—mentions the brain but twice in his extant corpus. Chrysostom, meanwhile, makes some twenty references to the brain. His student, Theodoret of Cyrrhus, discusses the brain at length in his On providence 3, and refers to it also in three Pauline sermons. A fellow student of Chrysostom, Basil of Caesarea, talks about the brain on four occasions. Basil’s younger brother and student, Gregory of Nyssa, discusses the brain in two homilies, two philosophical texts, and one polemical treatise. Other preachers of the Greek East mention the brain a handful of times altogether. The brain was of interest to Christian orators in a way that it was not and had not been to their pagan counterparts.

35 Lib., Or., 1, 216.9–13 and 7, 4.1–9, in the latter instance quoting Dem., Or. 7, 45.7–8.
36 Joh. Chrys., De stat. = ad pop. Ant. hom. 11.8 and 11.11 (PG 49, 123.35–124.7 and 125.19–34); In Heb. hom. 5.8 (PG 63, 53.11–54.14); Inan. glor. et ed. lib. 714–23 and 786–90; In Matt. hom. 44.7 (PG 57, 472.11–20); In Matt. hom. 47.4 (PG 58, 484.18–54); In Matt. hom. 62.3 (PG 58, 600.14–22); In I Cor. hom. 4.2 (PG 61, 31.11–31); In I Cor. hom. 10.7 (PG 61, 86.28–62); In I Cor. hom. 37.5 (PG 61, 320.36–55); In Eph. hom. 11.11 (PG 62, 84.4–32); In 1 Tim. hom. 4 (PG 62, 525.23–27); In 1 Tim. 13 (PG 62, 567.60–570.64); Princ. act. hom. 3 (PG 51, 92.16–36); In Act. apost. hom. 2 (PG 60, 32.32–9); In paralyt. dem. 8 (PG 51, 62.31–36); De sac. 6, 12.121–162; De Laz. conc. 5 (PG 48, 45–55); Comm. in lcb 24.25–6.
37 Thdt., De prov. 3 (PG 83, 600–05); Interpret. ep. i ad Cor. (PG 82, 328.51–54); Interpret. ep. ad Eph. (PG 82, 537.12–17); Interpret. ep. ad Col. (PG 82, 613.39–44); Theodoret also references the brain numerous times in texts outside of his oratorical corpus, Graec. aff. cur. 5.22.1–6; 5.81.1–6, HE 341.15–8, Haer. fab. comp. (PG 83, 336–556), and HR 13.13.
40 Ast. Am., Hom. 14.2.4.1–3; Cyr. Hier., Cat. ad ill. 12.27.6–8; Did. Caec., In Ps. 64.13–15; Ps.-Mac., Hom. spirit. 40.31–36.
41 Apart from Libanius, no other extant rhetorical text by a fourth- or fifth-century author who is not a theologian or cleric references the brain (based on a search of the TLG, using the search parameters “A.D. 4, A.D. 5” [date] and “Gramm. vel Soph., Orat., Rhet., Soph.” [generic epithet] and the search terms ἐγκέφαλος and μῆνιν [as lemmata]). Most non-Christian references are embedded in philosophical contexts. The Neoplatonist philosopher Iamblichus of Apamea (245–325 CE) notes, probably anachronistically (see Long 2013), that Pythagoras forbade his followers from eating the brain (enkephalos), since this was one of the “governing parts” (λαμβ.,
Conclusion

Late antique homiletic literature has not received significant notice or critical engagement outside of the field of Christian theology. When they do occur elsewhere in historical or philological studies, they have often been cited in the mode described by Vivian Nutton with regard to medical authors of the same period as “refrigerators.” Sermons and homilies, rarely regarded as high literature, have rather been plumbed for references to historical events or social historical conditions, as well as for quotations from classical authors otherwise lost. Yet, as this section has demonstrated, recent work has revealed the importance of homiletic literature as a pedagogical medium, and therefore as a petri dish for examining the kinds of lessons that preachers taught their congregations, and the language and models through which they endeavoured to do so. The following sections will draw upon this insight in examining John Chrysostom’s references to the brain.

*VP*. 24.109.4–8; *Protr*. 123.14–6; *Theol. arith*. 25.17–9). The rhetorician and philosopher Themistius (317–387 CE) also mentions the brain in relation to Aristotle’s theory of sleep in his commentary on the *Parva naturalia* (Them., *In PN* 24–8). Themistius is also our source for the only reference to the cerebral membrane (μηνιγξ) within the corpus defined by these search terms, naming it eleven times in his paraphrase of Aristotle’s *On the soul* (Them., *In de an*. 64–7). In should be noted that the disparity between Christian and non-Christian references may be due to the selective preservation of Christian texts by later copyists. We have, for example, no surviving rhetorical works from the iatrosophists, who presumably would have discussed the brain (indeed, most references to the brain in all extant texts dated to the fourth and fifth centuries come from the corpus of Oribasius). On the iatrosophists see Temkin 1935; Temkin 1962; Temkin 1973, 61–4; Duffy 1984; Watts 2009. A search of second- and third-century rhetoricians, using the same search terms and “generic epithet” search parameters as above, yields far more references, most of them in Athenaeus’s *Deipnosophistae*, with a small handful each in the works of Lucian, Claudius Aelian (*On the nature of animals*), and Euctenius’s paraphrase of Nicander’s *Theriac*. A good number derive from lexicographical sources also, such as Polybius’s *On barbarism and soloecism*, since ἐγκέφαλος provides a good illustration of the pronunciation vκ. In his treatise *On various kinds of style* 1.7.28–31, the rhetorician Hermogenes quotes the same line from Demosthenes (*Or*. 7, 45.7–8) as Libanius (*Or*. 7, 4.1–9).
2. Weaknesses of the Brain

The brain was subject to multiple kinds of vulnerability. It depended for its functioning on an appropriate balance of temperature and humidity. Second, and perhaps most famously, it was “soft,” requiring fortresses or helmets of bone for its protection. Finally, it was the receptacle of vapours rising from within the body and inhaled through the nose; these substances could mingle with psychic pneuma, affecting the quality of perception, thought, and self-governance; they could also make the brain heavy and could cause it pain, as in drunkenness or the disease of lethargy. In truth, these sources of vulnerability cannot be picked apart. The balance of bodily qualities was the foundation of the soft quality which enabled the brain to receive sensation, but which also made it vulnerable to outside blows. Sensation required a soft organ to receive the impressions delivered by the psychic pneuma, but this susceptibility to transformation through qualities of air passing through also made the brain peculiarly vulnerable to vapours and fumes rising from the stomach. Nonetheless, it will be heuristically useful in this section to move through each of the three in sequence.

i. Imbalance

John Chrysostom’s eleventh Homily on the statues, delivered in Antioch in 387, sought to demonstrate the providential care of the creator with regard to the human being.\(^{42}\) In order to do so, Chrysostom drew upon a theme familiar in ancient philosophy: The human body, designed peculiarly as an instrument for reason, is weaker than that of any other animal. Yet, through

\(^{42}\) De stat. = Ad pop. Ant. I use De stat. to refer to this text from now on. The standard translation is NPNF 1-09, but I use my own translations throughout.
human reason, tools have been developed to enable human beings to surpass all other animals, and so to rule over the earth.\textsuperscript{43}

As was the case with other Christian arguments for divine providence, Chrysostom relied upon the teleological principle that all characteristics of the human body are designed to support the distinctively human capacity of reason.\textsuperscript{44} The upshot of this, although never explicitly spelled out, was that reason was not to be thought of so much as compensation for physical weakness, but rather as its \textit{telos}. That is, weakness was a necessary component of a body designed for human reason. In Chrysostom’s text, this “rationalisation” of weakness is condensed in the vulnerability of reason to temperamental change within the brain:

Nor did he create the body in such a way [i.e., without physical strength] for its own sake, but so that it might participate in the rational soul; for if it were not [created] in such a way, the activities of soul would be certainly impeded; and this is clear from diseases. For, if the complexion of the flesh deviates from its accustomed constitution in any minor way, many activities of the soul are indeed impeded—the sort of thing I mean is if the brain becomes hotter or colder.\textsuperscript{45}

\textsuperscript{43} Arist., \textit{PA} 4.10, 687a23–687b, with particular reference to the hand. Cf. Basil, \textit{Hex.} 6, 1.37–42. For human rulership, despite physical weakness, see Amb., \textit{Hex.} 6, 6.36, 228.3–7.

\textsuperscript{44} I discuss teleology with regard to Aristotle in chapter two. Unlike Aristotle, Christian authors assume rational design. In this regard, Christian teleology fits more closely into a Galenic framework, as Galen postulated a demiurge, and therefore a principle of design (Schiefsky 2007a, 371). For Christian reception of Galenic teleology, Siraisi 1997, 4 (giving the example of Lactantius); Lloyd 2003, 234; Sharples and van der Eijk 2008, 13. D. Martin 2009, 123–24 contrasts the “conservative” teleology of Galen (that is, the demiurge must work within the constraints imposed by nature) with the Christian understanding of God as transcending natural constraints.

\textsuperscript{45} Joh. Chrys., \textit{De stat.} 11.11 (PG 49, 129.23–30): καὶ γὰρ τὸ σῶμα τοιοῦτον οὐχ ἄπλος ἐποίησεν, ἀλλ’ οἶνον εἰκὸς εἶναι λογικὴ ψυχὴ διακονούμενον· ὡς εἰ μὴ τοιοῦτον ἦν, σφόδρα ἂν ἐνεποδιαθήσαν αἱ τῆς ψυχῆς ἐνέργειαι· καὶ τοῦτο δῆλον ἐκ τῶν νοσημάτων. Εἰ γὰρ μικρὸν τι παρατραπεῖ ὑπὸ σοφίας καταστάσεως αὐτῆ τῆς σαρκὸς ἡ διακόσμησις, πολλαὶ τῶν ἐνεργειῶν τῆς ψυχῆς ἐμποδίζονται· οἷον τι λέγω, εἰ θερμότερος ἢ ψυχρότερος ἢ ἐγκέφαλος γένοιτο.
Vulnerability is part of human design in two respects: First, humans were created without natural bodily armour; second, reason requires a very precise bodily design (or “constitution”). The effect of deviation from this constitution was that one’s faculties of reason, perception, and self-control might be lost.

Chrysostom drew upon two medico-philosophical models to make this argument. First, his reference to the “complexion” and “constitution” of the flesh echoes the entrenched notion of health as constituted by a balance of humours or qualities, which in Galenic doctrine were the hot, the cold, the wet, and the dry. Second, Chrysostom’s exemplification of the brain as the part whose imbalance might obstruct the activities of soul, presumably those of reason, implies the prominent medical and philosophical argument that the brain is the instrument or seat of the hêgemonikon. At the convergence of these two models is the further implication that the health, or balance, of the brain is the fundamental requirement for psychic health.

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46 Cf. Gal., Thras. 19 (V 840.2–5 K.) for the notion that the health of the human body requires continual correction of balance to maintain health.

47 The earliest reference to this notion is B 4 DK: Ἀλκμαίων τῆς μὲν ὑγείας εἰναι συνεκτικήν τὴν ἰσονομίαν τῶν δυνάμεων, ύγροῦ, ἔρημου, ψυχροῦ, θερμοῦ, πικροῦ, γλυκέος καὶ τῶν λοιπῶν, τὴν δ’ ἐν αὐτοῖς μοναρχίαν νόσου ποιητικήν. “Alcmaeon [says] that the essence of health is the balance (ἰσονομία) of the powers: wet, dry, cold, hot, bitter, sweet, and the rest, and that monarchy among them is the author of disease.” Cf. Hipp., Nat. hom. Galen formalised existing concern with a balance of qualities, in, among other works, his treatises On the art of medicine, On mixtures and That the faculties of the soul follow the mixtures of the body. For discussion, see Ballester 1988, esp. 130–133; Mattern 2008, 102–105. Van der Eijk 2015, 677–679 offers a concise survey of theories of mixtures and balance up to Galen.

48 Cf. the emphasis that Isidore and Galen place upon the balance of qualities within the brain (chapter two). For the vulnerability of the brain, see also Greg. Nyss., Op. hom. 30 (PG 44, 244.47–51): εἰ γάρ τινα τρώσιν ἢ βρέχειν ὃ περὶ αὐτὸν υμὴν πάθοι, εὖθυς ἐπηκολούθησε τῷ πάθει ὁ θάνατος, οὐδὲ πρὸς τὸ ἀκαρή τῆς φύσεως ἀντισχούσης τῇ τρώσις, ἀλλὰ σχετικῶς τινὸς ὕποσποδέντος διόλον τὸ οἰκοδόμημα συγκατασκευᾶθη τῷ μέρει. “For if the membrane around it suffers some injury or tear, death immediately accompanies the affection, with nature not resisting the wound for a moment, just as, with the foundation sunk, the entire construction falls with the part.”
ii. Softness

The vulnerability of the human body is concentrated within the brain not only insofar as the rational faculties are located in that part, but also insofar as the brain itself is soft. Earlier in the same *Homily on the statues*, Chrysostom celebrated divine providence through discussion of the protection which the skull affords to the fragile brain:

But who might be able to trace out all the wisdom indicated by the brain? For, first of all, he made it soft, since he gave it the task of being the fountain of all the senses; then, so that it might not be damaged by its own nature, he walled it around on every side with bones.\(^{49}\)

Here, Chrysostom is drawing again upon Galenic medical doctrine.\(^{50}\) As Galen had discussed at length in books eight and nine of his treatise *On the usefulness of the parts*, both the brain and the sensitive nerves must be soft in substance, in order to receive sensory impressions, “for a substance easily altered is most suitable for such actions and affections, and a soft substance is always more easily altered than one that is harder.”\(^{51}\) Indeed, the brain, being the common instrument of sensation, needed to be softer even than the sensory nerves.\(^{52}\)

Galen’s theory of the “soft” brain and sensory nerves was grounded in the older philosophical axiom that the organ of sensation must be soft, since sensation is a matter of

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\(^{49}\) Joh. Chrys., *De stat.* 11.8 (PG 49, 123.35–40): Τίς δ’ ἄν δυνηθεὶς τὴν διὰ τοῦ ἐγκεφάλου δεικνυμένην σοφίαν ἀπασαν διελθεῖν; Πρῶτον μὲν γὰρ αὐτὸν ἀπαλὸν ἔποιησεν, ἐπειδὴ ταῖς αἰσθήσεσιν ἀπάσανας αὐτὸς χορηγεῖ τὰς πηγὰς· εἶτα ἵνα μὴ παρὰ τὴν οἰκείαν παραβλάπτηται φύσιν, ὅστοις αὐτὸν πάντοθεν ἐπετείχῃσε. For similar language in Galen, see *UP* 3.10 (III 243.5 K.): αἰσθήσιν δ’ αὐτοῖς ἐγκέφαλος χορηγεῖ.

\(^{50}\) Perhaps through the summary of the fourth-century medical writer Oribasius, *Med. coll.* 24.1.


\(^{52}\) Gal., *UP* 8.6 (III 636.14–16 K.): οὔτως οὖν τὴν μὲν οὕσιαν ὀμοιότατος ἔστι τοῖς νεύροις, ὅν ἐμελλεῖν ἄρχῃ γενήσεσθαι, πλὴν ὅσῳ μαλακότερος αὐτὸν ὑπάρχει.
*tupōsis* (“impression”) or *alloiōsis* (“alteration”) of the sensory organ or of the *pneuma* within it.\(^{53}\) This model of thinking about sensation was to have a long history in the theorisation of human sensibility.\(^{54}\) For late antique preachers, its primary importance was threefold: First, the softness required for sensation rendered the brain vulnerable; second, divine providence could be demonstrated in the cerebral protection provided by other aspects of bodily design; third, the soft vulnerability of the brain represented at a physiological level the dangers of sensory pleasure.

The first two points (the softness of the brain, and its protection through divine providence) were drawn directly from Galenic doctrine, and are best considered together. As we saw in the passage discussed above, Chrysostom celebrates the “fortification” of the soft brain in a wall of bone, so that it might not be harmed by its own nature, that is, by its softness.

Following this opening, he goes on at greater length to discuss how the double-membrane design and the particular construction of the skull contribute to the protection of the brain:

> And again, so that it might not, being grazed by the bones, become irritated, he stretched out a membrane between, and not one alone, but a second also, the one being stretched underneath the bone, and the other being cast around the flesh of the brain, and the first being harder than the second. He did this for the reason mentioned above, and also so that the brain might not directly receive blows endured by the head, but that the meninges, catching impacts in advance, might dissipate all harm, and preserve [the brain] uninjured.

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\(^{54}\) As, for example, in Descartes’s pineal gland, on which see Krell 1987 and Hatfield 2000.
Furthermore, the covering itself is not one continuous bone, but has many sutures all about, so that, once again, it might have a very secure foundation.  

Chrysostom once again draws upon Galen for this description of membranes, sutures, and skull. What he borrows, however, is not anatomical detail alone, but also the principle of Galenic teleology, that all parts of the human body are created toward the goal of the best possible instrument for reason.

That the hard skull was designed, like a helmet or a fortress, to protect the soft brain was a commonplace in late antiquity. In his sermon *On holy Easter*, for example, Gregory of Nyssa contrasts “the soft and loose brain” (ἐγκέφαλον ἄπαλόν καὶ μανόν) to the bone which surrounds it, which is not only “hard” (σκληρόν), but also “resistant (sc. to impression)” (ἀντιτυπές). The bones around the brain are insensitive, because they are hard, but they are necessary to protect the brain itself, which is sensitive but soft. This is an intriguing twist to Plato’s treatment of the brain as organ of reason in his *Timaeus*. As we saw in chapter one, Plato argued that the skull is thinly-covered in order to allow perceptions to travel through. That is, the softness or hardness of

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55 Joh. Chrys., *De stat.* 11.8 (PG 49, 123.40–51): πάλιν ἢνα μὴ τῇ σκληρότητι τῶν ὀστῶν παρατριβόμενος ἐνοχλήται, ὥμενα μέσον ἐπέτεινεν, σὺχ ἐνα μόνον, ἀλλὰ καὶ δεύτερον, τὸν μὲν ὑποτείνει τῇ βρέγατι κάτωθεν, τὸν δὲ ἀνωθέν περιβάλων τῇ τοῦ ἐγκεφάλου σαρκί· καὶ ἔστιν ἐκείνος τούτου σκληρότερος. Τούτῳ δὲ ἐποίησε διὰ τὴν εἰρήμενην αἰτίαν, καὶ ἦν τὰς φερομένας ἐπὶ τῆς κεφαλῆς πληγὰς μὴ πρῶτος ὁ ἐγκεφάλος δέχεται, ἀλλὰ προαπαντῶσαι αἱ μήνιγγες αὐτὰς ταῖς βολαῖς τὴν βλάβην διαλύσωσιν ἅπασαν, καὶ ἀνεπηρέαστον αὐτὸν διατηρῶσι. Καὶ τὸ μὴ συνεχές τε καὶ ἐν εἶνα τὸ καλύπτον αὐτὸν ὀστῶν, ἀλλὰ πολλὰς πανταχόθεν ἔχειν ῥαφὰς, πολλῆς ἀσφαλείας αὐτὸ πάλιν ὑπόθεσις γίνεται.


59 Cf. Gal., *UP* 8.6 (III 651.2–19 K.), which describes the delicate balance found in the bones within the nose: On the one hand, they are hard, in order to protect the brain; on the other hand, they are porous, since otherwise their hard quality would risk insensitivity. Their porous quality, Galen examples, allows odorous impressions (and also “residues,” in the form of mucus) to pass through.
the brain is not at issue: What matters is that the protective bone not be too dense, lest the mind be stifled. A thicker covering would have lengthened human life, but would have dulled human intelligence. The demiurge made a decision, somewhat like that of Achilles’ choice between a long life and everlasting fame, to keep human life brief and vulnerable, but to maximise human potential for sensitivity and reason.60

Following Galen, late antique preachers shifted the focus of this compromise from the skull (which, contra Plato, is considered strong) to the substance of the brain itself.61 This was perhaps because Galen had proved more authoritative with regard to the construction of the human body; it was also perhaps because his framing of the problem concentrated weakness in the impressionability of human nature, while celebrating the uncompromised protection provided by the creator. Thus, the bishop Theodoret of Cyrrhus, a pupil of Chrysostom, wrote in his Commentary on 1 Corinthians, that “the bones of these parts [sc. the liver and the brain] are more thinly-covered, but nonetheless come by greater security from the creator.”62 With a nod to Plato, Theodoret allows that the bones may appear to be weak, but that in fact they are strong. This was, of course, a central paradox in early Christian thought.63 The brain appears weak, but is strong because it receives special protection from the creator. This is, besides proof of design, the key upshot of late antique arguments about providence: Human beings are weak, but through the assistance of God, they are made strong.

60 Pl., Tim. 74d10–75c7.
61 This is not to say that Plato did not think the brain was both important and vulnerable to damage, but that late antique preachers chose to focus on this latter quality in a way that Plato did not.
62 Thdt., Interpret. ep. i ad Cor. (PG 82, 328.51–4): ἀσθενέστερα τῶν μορίων, καὶ ἀναγκαιότερα, τὸ ῥηματός τὸ ἐγκέφαλος· τούτων γὰρ τὰ ὀστά στεγανώτερα· ἀλλ’ ὃς τὸν πλείονος ἀσφαλείας τετύχηκε παρὰ τοῦ ποιήτου.
The understanding that the protective parts of the body (for example, the skull) must be read as signs of divine protection is substantiated by the traditional metaphors of the skull as a fortification or as protective armour. In his third sermon On providence, Theodoret describes the body as a city, with the head as the acropolis and the brain protected as a treasure within. The Platonist head-as-acropolis was a familiar motif. The idea of the brain as a “treasure” was so unusual, however, that the authoritative translation of this text erroneously renders “treasure” as “rich man,” in keeping with the more common understanding of the brain as an agent or official of the governing soul, having his residence within the acropolis of the skull. Theodoret’s variation of the model draws out various familiar aspects of the brain (for example, it is a key resource within the body, generating pneuma to activate the nerves), but emphasises above all its passivity as the object of divine protection.

Theodoret goes on to compare the skull to a helmet, writing that the word κρανίον (“cranium”) gets its name from κράνος (“helmet”). This analogy, if not the etymological

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64 Cf. Amb., Hex. 6, 8.49: huius uiri animae dicit: Ecce ego, Hierusalem, pinxi muros tuos. Non dixit: 'pinxi uentrem tuum', non dixit: 'pinxi inferioura tua', sed dicit: 'pinxi muros tuos' ualida se adserens homini murorum dedisse praesidia. “He says to the soul of this man: ‘See, Jerusalem, I have painted your walls’ [Isa. 49.16]. He did not say, ‘I have painted your stomach’; he did not say, ‘I have painted your lower parts’, but he said, ‘I have painted your walls’, proclaiming that he had given the strong protection of walls to the human being.”

65 Thdt., De prov. 3.27 (PG 83, 601.4–9): ἐπειδὴ δὲ εἰς αὐτὴν ἤκομεν τὴν κεφαλὴν, βλέπε αὐτὴν ὡσπερ ἀκρόπολιν τινα τῆς τοῦ σώματος πόλεως ἐν ὑψει καθημένην, καὶ οἶόν τινα πλοῦτον καὶ θησαυρὸν ἐν ἰσχυροτάτῳ φρουρίῳ φυλάττουσαν τὸν ἐγκέφαλον.

66 On architectural metaphors of the body, including in particular the head/acropolis, see chapter one, part four, and chapter two, part two.

67 Halton 1988, 43 translates τινα πλοῦτον καὶ θησαυρὸν as “a rich treasure” (PG 83, 601.8–9), but οἶόν τις πλοῦτος as “like a rich man” (PG 83, 601.26). The noun πλοῦτος (masc.) means “riches” or “treasure.”

connection suggested, echoes Chrysostom’s fifth homily *On the letter to the Hebrews*, where the
“helmet of salvation” is identified as the skull.

And it is necessary for us to have a helmet (lit: “headpiece”) also, since the rational part
(τὸ λογιστικόν) happens to be there [sc. in the head], and by this it is possible either to be
saved, if what is necessary comes about, or to be destroyed, if that which ought not be the
case [is done]. Because of this he says, “And the helmet of salvation.” For the brain is
soft by nature, and so is concealed from above by the bregma, as if by a shell; and it is the
cause for us of all that is good and all that is bad, knowing the things that are necessary,
or the things that ought not be.⁶⁹

The teleological arguments motivating the incorporation of a “helmet” into the human form are
twofold, and the connection between them must be inferred: The first is that the brain is soft, and
so, like an egg or a crustacean, requires a “shell.” The second is that the brain is the seat of the
rational faculty, which provides the understanding necessary for both virtue and salvation.

The most striking aspect of this passage is the connection that it makes between the
rational faculty, virtue, and the brain. While most of Chrysostom’s contemporaries were willing
to accept that the brain played some part in cognition, the idea that the rational aspect of soul,
which was responsible for individual salvation or damnation, could be confined within any
bodily part was strongly contested, since it risked making soul subject to body, rather than
transcendent of it.⁷⁰ Given the theological and philosophical arguments against such a claim,

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⁶⁹ Joh. Chrys., *In Heb. hom. 5.8* (PG 63, 54.6–14): δεῖ δὲ ἡμῖν καὶ περικεφαλαίας. ἐπειδὴ γὰρ
ἐκεῖ τὸ λογιστικόν τυγχάνει, καὶ ἀπὸ τοῦτο ἡ σωθήναι δυνατὸν, ἐὰν τὰ δέοντα γίγνωνται, ἢ
ἀπολέσθαι ἐνι, εἰ τὰ μὴ δέοντα· διὰ τούτο φησι· Καὶ τὴν περικεφαλαίαν σωτηρίου. Ὁ γὰρ
ἐγκέφαλος φύσει μὲν ἐστὶν ἀπαλός· διὸ καὶ αὐτὸς καθάπερ τινὶ ὀστράκῳ, τῷ βρέγματι
καλύπτεται ἄνωθεν. Πάντων δὲ ἡμῖν αἴτιος γίνεται τῶν ἁγαθῶν καὶ τῶν κακῶν, εἰτε τὰ δέοντα
γνοὺς, εἰτε τὰ μὴ τοιαῦτα.

⁷⁰ See especially Greg. Nyss., *Hom. op. 12* (PG 44, 156.27–164.52), discussed in chapter two. A
similar tension has been observed with regard to the passions as “bodily” constraints upon the
soul (Barnes 1994, 5). From the opposite perspective, see Tert., *De res. mort. 15.16*, which
argues against those who would locate the rational soul outside of the flesh, and insisting that
“flesh is the entire think-tank of the soul” (*caro erit omne animae cogitatorium*).
what motivated preachers such as Chrysostom and Theodoret to emphasise the danger of damage to the brain?

The answer must lie in the cerebral functions. While Chrysostom does not in this passage explain cerebral softness in terms of the sensitive faculty, it is clear from his other texts both that he assumed that the soft quality of the brain is responsible for its capacity for sensation, and, furthermore, that he could mention this in a public sermon without substantial explanation. In late antique medical doctrine, the brain was widely assumed to be responsible for sensation, and therefore to be soft and in need of protection. At the same time, as this passage shows, the brain also housed (or shared a space with) the “rational principle” (τὸ λογιστικόν), and furthermore was “the cause for us of all that is good and all that is bad, knowing the things that are necessary, or the things that ought not be.” That is, the brain was responsible both for sensation, and for knowledge of the actions and conditions necessary—necessary, we might assume, for salvation. The brain was to be protected because it was weak (as instrument of sensation) and also because it was important (as instrument of reason). Chrysostom’s identification of the cranium with the “helmet of salvation,” and his explanation of this association in terms of brain function—that is, one must “know” the things that are necessary—suggests that the integrity of the brain could be a precondition for salvation. One’s ability to rationally discern the good from the bad and that

71 See, for example, Joh. Chrys., De stat 11.8 (PG 49, 123.36–8): πρῶτον μὲν γὰρ αὐτὸν ἀπαλὸν ἐποίησεν, ἐπειδὴ ταῖς αἰσθήσεσιν ἀπάσαις αὐτὸς χορηγεῖ τὰς πηγάς.
72 Orib., Coll. med. 24.17.1–4; Vindic., Epit. alt. 3, 467.27–8 does not describe the brain matter but the vessels within the brain as “soft and tender” (teneribus tenuisque ... uenolis), then emphasising the need for the cerebral membrane and the hair to protect the brain (468.2–3, 9–10). Chrysostom’s appropriation of these characteristics within his sermons suggests that they were legible outside of technical medical discourse. Texts which comment on the softness and sensitivity of the brain include Amb., Hex. 6.9.61; Greg. Nyss., Sanct. pasch. 258.21–5; Thdt., Graec. Aff. Cur. 5.81.4; Cass., De an. 10.17–19.
73 For the brain literally as the “house” of the rational principle, see Joh. Chrys., Inan. glor. et ed. lib. 786–90.
which should be from that which should not was the “helmet” through which one protected one’s soul.

The physical explanation for the need to protect the brain—that it is soft, which is because it is sensitive—suggests further that it was the involvement of the brain in human sensitivity that endangered its role as an organ of rational thought, and which might therefore also compromise the individual’s capacity for virtue. “Softness” was, in Greco-Roman tradition, as well as in Christian ascetic discourse, a female quality, signifying dissolution, dissipation, and a lack of critical rigour or self-control. Sensitivity was similarly gendered: As Philo had observed in his exegesis of Genesis, the senses were to reason as Eve was to Adam, luring the masculine intellect away from devotion to God. The “soft” quality of the brain thus refers both to its material texture and, at the same time, to luxury and love of pleasure, which were typically viewed as bodily threats. The localisation of sensitivity within the brain meant that this organ was required to assume “female” characteristics which threatened its security, and the security of “masculine” reason.

74 Dean-Jones 1994, 57ff.; King 1998, 47–50; Flemming 2000. King 2013, esp. 31–48 argues that women’s bodies are characterised not primarily by “female” genitalia, but by the softer, warmer, and wetter texture of their flesh. In general, “softness” was not a desirable quality for the late antique male: Thus, one word for “ascetic discipline” was σκληραγωγία (“training in hardness”).


76 Thus, ascetic practices were thought to “dry out” and to “harden” female flesh, such that they might be perceived as transformed into males. Elm 1994, 114ff.; T. Shaw 1998; Kidd 2007. Castelli 1991 is important with regard to the assumption of “male” roles and bodies by female ascetics.

77 On the link between perceptual and emotional sensitivity, see Arist. [Prob.] 31.12, 958b16–7, 20–2: διὰ τι νῦν διαφέρουσιν αἱ αἰσθήσεις αἱ ἐν τοῖς δεξιοῖς τῶν ἀριστερῶν, ἐν δὲ τοῖς ἄλλοις πάσι κρείττο τὰ δεξιὰ; ... ἢ ὅτι τὸ μὲν αἰσθάνεσθαι πάσχειν τι ἐστι, τὰ δὲ δεξιὰ διαφέρει τῷ ποιητικῷ ἐκείνῳ καὶ ἀπαθεστᾶ τῶν ἀριστερῶν. “Why are the senses on the right not superior to those on the left, whereas in all other respects the parts on the right are stronger? … is it because to perceive is to suffer something, while the parts on the right are superior by being
As recent work on the senses in antiquity has demonstrated, late antique Christian authors in particular felt ambivalent about whether the senses were to be celebrated as points of access to divinity, through, for example, creation, or to be feared as windows and conduits through which sensory experience might damage the soul. While this motif might conventionally be understood in psychological terms as an “entryway” for “temptation,” the fundamental contribution of Gregory Smith shows that the openings of the sensory organs allowed external impressions, carried upon the air, to alter the substance of the pneuma within the brain in a manner akin to the invasion of demons. Thus, the “affection” (pathos) of sensation could be understood along the lines of an “invasion model” of disease, polluting the spirit within through contact with sensory objects.

more active and less affected than the parts on the left?” Trans. Mayhew and Mirhady 2011. This argument, that vision operates equally across both left and right sides because acute perception is not a strength but a sign of weakness (“susceptibility to affection”) recurs several times in Prob. 31. Webb 1997 discusses the invocation of phantasiai (sensory impressions) in rhetoric in order to provoke pathê in one’s listener.

78 Toner 2015, 164: “senses such as smell were thought to pose a moral risk to Christians, in that they could enter and corrupt the body via temptation and entice the soul away from the path of life.” Although note that Toner balances the corrupting potential of sensory input against the medicinal and restorative power of smell, on which see more below. Cf. chapter two, fn122.

79 G. Smith 2008, 496: Through their constitutional affinity with the human soul (that is to say, their pneumatic quality), demons have the power to instigate “psychological (which is to say quite physical) ‘movements’ in a person’s soul.”

80 On “pollution” as an illness model in early Christianity, see Martin 1995, esp. 139–61. Douglas 1966 provided a language for medical anthropologists and historians to talk about “pollution” in conceptualising health and disease, although she described the process not as the use of ideas about pollution to structure disease categories, but rather as the appropriation of “the laws of nature … to sanction the moral code,” focusing upon illnesses thought to be caused by moral transgression (3). Parker 1983 is fundamental for the history of pollution in antiquity, and examines the relationship between pollution and disease at 235–56.
A supporting case can be found in another of Chrysostom’s sermons, *On vainglory and on raising children*. In this text, Chrysostom argues that vainglory is one of the more terrible passions, affecting even those who otherwise lead upright lives. Avoidance of vainglory must therefore be taught from early childhood, and Chrysostom lays out a method for doing so. The central aspect of his method is control of sensory input, in order to avoid encouraging the impressionable child to seek out sensuous experiences. Just as a lawgiver establishes regulations regarding traffic in and out of the city gates, so a parent guards the sensory organs of his (typically his) child from undesirable visitors:

If it is not blocked up, this gate [the nose] also permits great mischief to enter, such as spices and the fumes of incense. For nothing so loosens, nothing so slackens the soul, as to take pleasure in fragrant smells. “What, then,” one might say, “Must we rejoice rather in filth?” This is not what I am saying: I mean that we must enjoy neither one nor the other. Let nobody introduce perfume, for the brain, upon receiving this, immediately and entirely slackens [or: “slackens the whole”]. From that point on, pleasures are kindled, together with a great desire for [their] fulfilment.

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81 The standard English translation is Laistner 1951. I use my own translations, except where otherwise indicated.
82 Vainglory is a favourite subject for Chrysostom. See Leduc 1969; Leyerle 2001, 48–9; Roskam 2014. Nor was Chrysostom alone in considering vainglory to be among the worst of the passions. Evagrius, while he considered anger to be the greatest of the *logismoi* (“thoughts”) to afflict the monk, suggested that vainglory was more dangerous, as one’s success as an ascetic practitioner actually increased one’s susceptibility to this thought. For a brief overview, see Tilby 2005, 149. Corrigan 2009, 83 suggests that “vainglory seems to be the material source for all the other *logismoi* which have different relations to matter, and it is even said to give birth to ‘the first pride’ … namely, that of Lucifer.” Strikingly, Evagrius associates vainglory with rational thought, which is located within the brain: Cf., Evagr., *De or.* 72 (PG 79, 1181.41–51), in which the demon of vainglory acts through the brain, and also Corrigan 2009, 44: “vainglory and pride may be pathologies of the rational part [of the soul].”
83 For the relationship between sensory input and susceptibility to pathê, see Harvey 2006, esp. chapters one and four.
Chrysostom encourages the barricading of the nostrils, in order to prevent the invasion of “great mischief,” which will affect both the physical quality of the brain, and the child’s susceptibility to pleasures.

In Chrysostom’s account of the senses, it is only with regard to smell that he mentions the brain. This is in keeping with late antique medical doctrine, which taught that smell, of all the senses, acted most directly upon the brain. Galen had written in his treatise *On the usefulness of the parts* that “it is necessary that the individual percept of this sense [i.e., the sense of smell] should alter a portion of the brain.” Indeed, according to Galen, the organ of smell was not the nose (or any portion thereof) but rather the front ventricles of the brain itself, on the grounds that only these contain the vaporous substances which must be altered by vaporous smells from outside. This precept, assumed in *On the usefulness of the parts*, was substantiated at length in

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85 Chrysostom identifies “four gates” in the walls of the body: “eyes, tongue, hearing, smell, and, if you like, touch” (*Inan. glor. et ed. lib.* 361–62: οἱ ὀφθαλμοί, ἡ γλῶσσα, ἡ ἀκοή, ἡ ὀσφρησις, εἰ βούλει καὶ ἡ ἀφή). The “tongue” is described as a gate through which pass not the sensory impressions of taste but the “drones” of speech (366–455). The “ears” are a gate through which might pass dangerous and alluring tales, but by means of which the child might also be fruitfully instructed; in his discussion of the ears, Chrysostom focuses more upon the content and analysis of stories told, than upon auditory physiology (456–713). Much less space is devoted to the topic of smell (714–27), but Chrysostom attends more closely in this paragraph than in any other to the intertwined physiological and psychological effects of perfume. Following his discussion of smell, Chrysostom deals briefly (728–75) with the gate of the “eyes,” focusing in particular upon the problem of female beauty. He then concludes his discussion with a fifth gate, “unlike the others because it extends through the whole body”—that is, touch (776–83). Chrysostom remarks only that touch deceives, since it appears closed, but is in fact open to all comers; in order to protect the child, “we must allow [or “touch”— a pun on ἄφωμεν] this [gate] to mingle neither with soft clothing nor with bodies,” in order that “we might render it firm” (779–81: ταύτην μήτε ἀπαλοῖς ἰματίοις μήτε σώμασι προσομιλεῖν ἄφωμεν. Σκληρὰν αὐτὴν καταστήσωμεν).

86 Gal., *UP* 8.6 (III 647.11–13 K.): ἔδει μὲν γὰρ καὶ τὸ ταύτης τῆς αἰσθήσεως ἱδιον αἰσθητῶν ἄλλοισι τὴν ἐγκεφάλου μοῖραν.

87 Siegel 1970, 140–57 discusses in anatomical and physiological detail Galen’s teachings on smell. Note that Chrysostom states elsewhere that the nostrils are the organs of smell, but that
Galen’s separate work *On the olfactory instrument.* The latter of these works was summarised by Oribasius in his fifth-century medical encyclopedia, and also by Nemesius in his treatise *On the nature of the human being.* Chrysostom’s precise source is unknown, but the general derivation of his concerns about odours acting upon the brain is clear: According to Galenic doctrine, recounted in detail by medical and theological authors, smell was the sense which acted most directly upon the brain.

The intimate relationship between smell and the brain provoked anxiety more broadly. As Susan Ashbrook Harvey observed in her foundational work on smell in late antiquity, the intimate relationship between smell and the brain made smell both the most acute and the most they quickly transmit their sensory perception to the brain (Joh. Chrys., *In 1 Cor. hom.* 10.7 [PG 61, 86.28–62]).

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88 Gal., *UP* 8.6 (III 647.8–11 K.): λοιπὸν δ’ ἐπὶ τὸ τῶν ὀσμῶν αἰσθητήριον ἐνδόν ἐγένετο τοῦ κρανίου, μόνον ἀπάντων ἐν αὐτάις τοῦ ἐγκεφάλου ταῖς προσθίαις κοιλίαις ἀτμώδες τι πνεύμα περιεχόσας. “But finally, the sensory instrument of smell is created within the cranium, the only one of all [to be] inside those front ventricles of the brain which hold within a certain kind of vaporous pneuma.”


90 Siegel 1970, 153: “Although Galen localised all perception into the ventricles or the substance of the brain without attributing specific functions to circumscript areas, he had described the olfactory system as a little brain in its own right.” Although cf. ibid., 152, where Siegel suggests that smell presents an unfortunate contradiction of Galen’s more general physiology of perception.
unstable of senses.\textsuperscript{91} Smell was, quite literally, transformative: In theological metaphors, it represented divine epiphany; in ascetic discourse it more commonly signified intractable temptation to indulge in sensual pleasure.\textsuperscript{92}

In her recent work on smell in Galenic writings, Laurence Totelin explains this tension in terms of the juxtaposition of reason and perception in the brain:

\[\text{Although smell was probably the most animal sense, Galen felt able to locate its organ in the brain, which he considered the seat of the rational soul. It is little surprise to find, then, that the complex and controversial status of olfaction was also a subject of considerable debate among contemporary philosophers, for whom the connections between body and smell, and the relationship between perception, knowledge and understanding, were likewise subjected to intensive scrutiny and analysis.}\textsuperscript{93}\]

That is, the localisation of both smell and reason in the brain provided a material counterpart to philosophical discussions about the relationship between bodily perception and the incorporeal mind.\textsuperscript{94}

It is important to note that this relationship is not merely allegorical, but is also mechanical: That is, the proximity of the organs of smell and thought does more than represent their juxtaposition in philosophical questions; through the intrusion of odours into the front ventricles of the brain, the “vaporous” substance within—that is, the psychic \textit{pneuma}\textemdash must be

\textsuperscript{91} Harvey 2006, 103–04.
\textsuperscript{92} Harvey 2006, 129 for divine fragrance, and 161 for ambiguity regarding the effect of smells. See also ibid., 162: “An ascetic rhetoric of sensory control thus permeated late antique homiletics and writing, even as Christian practices became more sensorily demanding. … Ascetic rhetoric provided means by which to grasp the volatile situation and reconfigure its structure.” Woolgar 2006, 117–46, examining the transformation of late antique thinking about smell in Late Medieval England, highlights the association between good odours and sanctity, bad odours and sin; in late antiquity, as Harvey has made clear, the picture was more complex.
\textsuperscript{93} Totelin 2015, 29.
\textsuperscript{94} Laks 1999 explores this relationship in early Greek philosophy. Smith 2004, 8 discusses the relationship between external perception and internal perception in the writings of Plotinus.
altered. Since this is the same pneuma which works through the middle and rear ventricles of the brain also, to bring about thought, memory, and voluntary motion, the odours which enter through the nose and alter the vapours affect the substrate of thought itself. The (instrument of the) rational soul is materially transformed by smell.

Chrysostom represents this intertwining of the physiological and the psychological in the repetition of the verb “slackens” (χαλά/ἐχάλασεν). Perfume slackens the brain, and perfume slackens the “tension” (tonos) of the soul.” The dissolution of the child upon exposure to pleasant odours is over-determined, as the temptation of pleasure operates with an attractive and a loosening force at the levels of both brain and soul. A further meaning of slackens emerges if we take the phrase τὸ πᾶν ἐχάλασεν not intransitively (the brain “entirely slackens”) but transitively (the brain “slackens the whole”). In the first reading, “slackens” describes the alteration of brain substance by the entering odour; in the second, “slackens” describes the effect of the transformed pneuma upon the nerves which branch out from the brain.

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95 See G. Smith 2008, 501 for a fourth-century love spell which invokes myrrh as a demon formed of pneuma, and which therefore can act directly upon the pneuma within the brain.  
96 Cf. G. Smith 2008, 508: “The substance of thought [sc. pneuma] is what makes it possible to talk, all in the same breath, about material constitution, fine-material physics, and the relationship of demons to the self.”  
97 For a detailed examination of “psychophysical causality” in Stoic philosophy, see Sedley 1993. For the material alteration of the soul by vaporous and airy substances, with reference to a thinker of a different period, see Sutton 2000, 704. Cf., once again, G. Smith 2008, 510, who observes that, according to Evagrius at least, demons “reportedly enter their victims through the nose” (citing, e.g., Evagr., Pract. 39).  
98 Nemesius of Emesa, following Galen, might argue that there is no difference between these readings, as the nervous system is merely an extension of the brain, insofar as the nerves are infused with psychic pneuma (Nem., Nat. hom. 8, 64.2–15]). Cf., Gal., PHP 7.7.19.2–3: αὐτό τε γὰρ τὸ νεῦρον ἐγκεφάλου μέρος ἐστὶν οἰόνυφι ἀκρεμών ἢ βλάστημα δένδρου. “The nerve is itself a part of the brain, like a branch or offshoot of a tree.”
Tonos was a fruitful concept in ancient philosophy and medicine, particularly following the Hellenistic period (third to first centuries BCE).\(^9^9\) It had several meanings. (1) In physics and engineering, it referred to “the peculiar property of elasticity,” as exploited, for example, in spring catapults.\(^1^0^0\) (2) In anatomy, tonos was a term for the non-differentiated category of “tendons, sinews, muscles.” Thus, in his treatise *On the movement of muscles*, Galen writes that “nerve (νεῦρον) or sinew (τόνος) stems from the brain or spinal marrow.”\(^1^0^1\) He explains the existence of two words for the same organ as descriptive of the “pushing (νεύειν) and pulling (τείνειν) motion” necessary for movement.\(^1^0^2\) (3) Within Stoic physics, tonos was a quality of the *pneuma*, enabling a continuum of unified bodies, with differentiation between inanimate, animate, irrational, and rational beings.\(^1^0^3\) The souls of rational animals displayed an extremely high level of pneumatic tension; irrational animals slightly less; plants and then inanimate objects such as rocks the least tension of all.

(4) In Stoic psychology, meanwhile, the tonos of the soul referred both to the tonos of the *pneuma* (that is, the material substance of soul), and also to the strength of what we might call the “will.” As Christopher Gill writes in his account of Stoic psychology, certain “dispositions

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\(^9^9\) Hahm 1977, 170–71 and Berryman 2009, 194–96 survey uses of *tonos* prior to Hellenistic science and Stoic philosophy. Note Berryman’s critique at 193fn67 of Sambursky’s claim that *tonos* had been an active philosophical term from at least the fifth century BCE (Sambursky 1959, 3fn21).

\(^1^0^0\) Berryman 2009, 193–95. See also ibid., 196, where Berryman emphasises that *tonos* was “a technical term for a property of matter in general, important in explaining its ability to transmit impulses and convey complex forms by physical contact.”

\(^1^0^1\) Gal., *Mot. musc.* 1 (IV 369.6–7 K.): νεῦρον δὲ καὶ τόνος ἐξ ἐγκεφάλου ἢ νουτιαίου φύεται. I use the terms suggested in Goss 1968, 2.

\(^1^0^2\) Gal., *Mot. musc.* 1 (IV 369.7–8 K.): κέκληται δ’ ἀπ’ αὐτῶν τῶν ἐνεργειῶν δύο ὄνομασιν ἐν ὀργανον, ὅτι νεύειν καὶ τείνειν πέφυκεν.

\(^1^0^3\) Annas 1992: 53: “Soul, then, is not just *pneuma*, but a specific level of *pneuma*, with the degree of tensions required for it to function as *pneuma psuchikon*, the *pneuma* of a soul, unifying a body and enabling it to perceive and act in certain ways.” See my discussion of Stoic physics in chapter one.
are marked by instability and incoherence, as well as by mutual conflict. ... This category is often explained by reference to Chrysippus’ comments, recorded by Galen, about psychic ‘weakness’ or ‘lack of tension’ or ‘sinew’, *atonia*.“104 “A soul which lacks tension, or is slack,” Teun Tieleman writes, “is weak. Such a person cannot keep to his or her intentions and so abandons the most reasonable course of action.”105 Thus also, Martha Nussbaum titles the ninth chapter of her influential work *The Therapy of Desire* “Stoic Tonics,” and writes therein that philosophy’s “medical function is understood as, above all, that of *toning up* the soul—developing its muscles, assisting it to use its own capabilities more effectively.”106 As she observes in a footnote, the “toning” of the soul “is not just a metaphor but a literal physical idea.”107 That is, the *tonos* of the soul is the *tonos* of the psychic *pneuma*.108

105 Tieleman 2003, 113. Cf. the important passage from Galen’s treatise *On the opinions of Hippocrates and Plato*, which Tieleman cites: Gal., *PHP* 4.6.2 = SVF III, 473, part: ὃσα γὰρ οὐκ ὀρθῶς πράττουσιν ἀνθρώποι, τα μὲν εἰς μοχθηρὰν κρίσιν ἀναφέρει, τὰ δ’ εἰς ἀτονίαν καὶ ἁσθένειαν τῆς ψυχῆς, ὥσπερ γε καὶ ὧν κατορθοῦσιν ἡ ὀρθὴ κρίσις ἐξηγεῖται μετὰ τῆς κατὰ τὴν ψυχὴν εὐτονίας. “Some of the things which people do wrongly [Chrysippus] refers to bad judgement, others to the soul’s *atonia* and its weakness, just as their correct actions are guided by right judgement together with the *eutonia* of soul.” Tieleman 2003, 238 warns against following Galen in assuming here “an admission of two separate powers,” that is, (incorporeal) judgement and physical tension. This is a rhetorical move on Galen’s part, obscuring the Stoic theorisation of soul as a “corporeal substance—here represented by the soul’s physical tension.”106 Nussbaum 1994, 317–18.
107 Nussbaum 1994, 318fn3. Cf. Graver 2007, 116: “Given Stoic notions of the relation between systematicity of judgement and an optimal level of tension in the mind’s material substrate, it would be natural enough for him [sc. Chrysippus] to describe all the specified conditions as various ways in which pneumatic tension might be relaxed to the point of impairment.”
108 Trompeter 2016, 98: “If, assuming the existence of psychic *pneuma*, psychic properties are in Stoic doctrine material conditions, which come to be through the *tonos* of the *pneuma*, this means that all movements of the will of the unified soul, all its rational deeds and not-deeds, come about, finally, through the strength or weakness of its *pneuma.*” “Wenn, bedingt durch die Annahme einer Existenz von psychischem *pneuma*, nach stoischer Lehre seelische Eigenschaften materielle Zustände sind, die durch den *tonos* des *pneumas* bestimmt werden, führt dies zu der Konsequenz, dass alle Willensregungen der eingestaltigen Seele, ihr rationales Handeln oder Nicht-Handeln, leztlich zur Gänze durch die Stärke oder Schwäche ihres *tonos* bestimmt werden.”
Galen, who is one of our central sources for Stoic theories of emotion, develops the notions of *atonia* (poor *tonos*) and *eutonia* (good *tonos*) of the soul in such a way as to steer it back toward a Platonic tripartite psychology. In *Republic* book three, Plato had referred to the “slackening” (*ἀνιεμένω*) and “tightening” (*ἐπιτεινομένω*) of the soul through musical and gymnastic education.\(^{109}\) While gymnastics hardens the *thumos* (the spirited part of the soul, which is located within the chest), excessive musical education has quite the opposite effect:

> Whenever, therefore, someone allows music to charm him and to pour down through his ears into his soul, as if through a funnel, those sweet, soft, and mournful harmonies which we were just now speaking about, and spends his whole life warbling and taking pleasure in song, this man first softens like iron his spirit, if he has it, and makes useful what was otherwise useless and rigid. But if he holds on, not letting go, but being bewitched, then he melts this [spirit] and pours it out, until his spirit is melted away and cut like sinews (νεῦρα) from the soul, and he makes of himself a “soft spearman.”\(^{110}\)

*Thumos*, as we saw in chapter one, is the middle part of the soul between the rational part and the desiderative part, and acts as a guard for reason, disseminating and enforcing the commands sent down from above.\(^{111}\) Here, this protective function is imagined like a sinew or a tension, made

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\(^{109}\) Pl., *Resp*. 412a1; Trompeter 2016, 87.

\(^{110}\) Pl., *Resp*. 411a5–b4: Οὔκοιν ὅταν μὲν τις μουσικὴ παρέχῃ καταυλεῖν καὶ καταχεῖν τῆς ψυχῆς διὰ τόν ὅσπερ διὰ χώνης ἢ νυνθὴ ἢμεῖς ἐλέγχομεν τὰς γλυκείας τε καὶ μαλακὰς καὶ θρηνώδεις ἁρμονίας, καὶ μινυρίζουν τε καὶ γεγανωμένοις ὑπὸ τῆς ὁδῆς διατελῆ τὸν βίον ὅλον, οὕτωσί τοῦ μὲν πρότον, εἰ τι θυμοειδὲς εἶχεν, ὅσπερ σύδηρον ἐμαύλαξεν καὶ χρῆσιμον ἐξ ἀχρήστου καὶ σκληροῦ ἐποίησεν· ὅταν δὲ ἔπέχων μὴ ἀνὴρ ἄλλα κηλή, τὸ δὲ μετὰ τοῦτο ἤδη τήκει καὶ λείβει, ἐστὶν ἐκτίτηξι τὸν θυμὸν καὶ ἐκτέμεν ὁσπερ νεῦρα ἐκ τῆς ψυχῆς καὶ ποίησι “μαλακῶν ἀχίμητην.” See Trompeter 2016, 87–8 on this passage.

\(^{111}\) See chapter one.
strong through gymnastics and pliable through music, but rendered utterly useless, indeed, “cut” by excess pleasure in song.\textsuperscript{112}

Galen, as Julia Trompeter demonstrates in a recent article, brings together Plato’s notion that \textit{thumos} is like the \textit{neura} of the soul with the Stoic theorisation of \textit{tonos} as a psychophysical condition causing a strong or a weak will.\textsuperscript{113} Understanding the \textit{tonos} of the soul to be a function of the \textit{thumos} akin to the boiling of innate heat within the heart, Galen explains the importance of this \textit{tonos} as enabling the \textit{thumos} to appropriately manage the relationships between the other two parts of the soul, protecting reason from desire and enforcing the commands of reason when desire gets in the way.\textsuperscript{114} “Galen’s particular contribution,” writes Trompeter, “in his adaptation of Platonist tripartition consists in this, that he ... pins down the \textit{tonos} of the soul as the \textit{ergon} of the \textit{thumos}.”\textsuperscript{115}

\textit{Tonos}, in Galen’s model, operates physiologically as well as psychologically. The heart, which is the seat of the \textit{thumos}, produces the vital \textit{pneuma} which travels through the arteries together with the blood. Through close reading of Galen’s references to vital \textit{tonos}, which we might plausibly understand as the \textit{tonos} of the vital \textit{pneuma}, Trompeter suggests that the animal’s emotional, mental, and physical health depends upon both its psychological condition (the good \textit{tonos} of the soul, that is, a balanced relationship between the three parts of the soul, as mediated by the \textit{thumos}) and its physiological condition (good vital \textit{tonos}, that is, the \textit{tonos} of

\textsuperscript{112} See Vegetti 1993 for a detailed discussion of the \textit{neura} of the soul in ancient philosophy and medicine. Trompeter 2016, 88 emphasises that Plato’s usage here is entirely metaphorical.

\textsuperscript{113} Trompeter 2016, 89 discusses the \textit{tonos} of the soul in Galen’s psychological works.

\textsuperscript{114} On \textit{tonos} as a function of the \textit{thumos}, see Trompeter 2016, 92–99, 106. On the importance of \textit{tonos} and \textit{thumos} in maintaining a healthy relationship between the parts of the soul, see ibid., 88–92. See also the discussion in Schiefsky 2012, 337.

\textsuperscript{115} Trompeter 2016, 92: “Galens besonderer Beitrag in seiner Adaption der platonischen Tripartition besteht darin, dass ... er den \textit{tonos} der Seele als \textit{ergon} des \textit{thumos} bestimmt.” My translation.
the vital *pneuma*).\(^{116}\) It is striking that Trompeter, following Galen, focuses upon the *tonos* of the vital *pneuma*, and not that of the psychic *pneuma*, which one might expect to be more salient in a physiological correlate to the *tonos* of the soul. After all, the tension of psychic *pneuma* can also be loosened and dissolved: According to Galen’s treatise *On the affected parts*, a loosening of the *tonos* of psychic *pneuma* within the cerebral ventricles causes a pain in the head and may lead ultimately to *karos* (stupor).\(^{117}\)

Trompeter explains Galen’s emphasis upon vital *pneuma* as a reflection of his persistent desire to avoid any suggestion of Stoic materialism. The loosening of the *tonos* of psychic *pneuma* in the example mentioned above is caused by trephination; based on Galen’s comments upon experiments elsewhere, it is likely that the tension was thought to lessen because some of the *pneuma* had escaped.\(^{118}\) As we saw in chapter one, Galen insisted above all that this escape of *pneuma* did not indicate the loss of “soul” itself, but rather of the soul’s first instrument. If Trompeter is right, then Galen emphasises as the physiological correlate of the “*tonos* of the soul” the *tonos* of vital *pneuma*, rather than the *tonos* of psychic *pneuma*, in order to maintain a strict distinction between the psychological and the physiological realms, even as he seeks to draw them into relationship with one another.

By the fourth century CE, the phrase “the *tonos* of the soul” had accumulated rich layers of meaning that emphasised the interpenetration of body and soul in affective events. In his warning that perfume will “slacken” the *tonos* of the soul, Chrysostom situates himself firmly within Stoic psychology. Yet, by paralleling this slackening to the slackening of the brain,

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\(^{118}\) See chapter one.
Chrysostom flags his awareness that psychic *pneuma* is located not in the heart, as Stoic philosophers had claimed, but within the brain.\(^{119}\) The slackening of soul, the slackening of the whole brain, and the brain’s slackening of the whole (body) are, as must now be clear, versions of the same psychophysiological event.\(^{120}\) To cause the brain to slacken is, according to Chrysostom, to slacken the *tonos* of the soul.\(^{121}\)

We might be reminded of the incongruous moment in Gregory of Nyssa’s *On the constitution of the human being*, where—after flatly denying medical arguments for the brain as the seat of the mind—Gregory likes the power in the cerebral membranes to the force and mechanism (μηχανής) which might bring a statue (ἀνδριάντα) to life—just like, he adds, a charioteer (ἡνίοχος), imparting to the muscles both impulse and power.\(^{122}\) Gregory, as we saw in chapter two, appears to borrow both from the “puppets” described by Aristotle and by Marcus Aurelius (although both these philosophers identified the “mechanism” of the puppets with the heart, rather than with the brain), and also from Plato’s *Phaedrus*, in which the “charioteer” (ἡνίοχος) is the rational and ruling part of the soul.\(^{123}\)

\(^{119}\) He is also clearly aware of Plato’s argument that music will soften the *thumos* and slacken it like *neura* of the soul, suggesting in one of his homilies on Lazarus that lamentation “softens the good tension of the soul.” Joh. Chrys., *Laz. conc.* 3.1 (PG 48, 993.4–5): πολλάκις δὲ καὶ μέλος κατακεκλασμένον τὸ τῆς ψυχῆς εὔτονον κατεμάλαξε.

\(^{120}\) Gill 2006b is crucial to understanding *pneuma* as the bridge between psychological and physiological causality.

\(^{121}\) There is comparable elision in contemporary engagement with the relationships between brain and soul (more often identified as “self” or “mind”). See, for example, the following titles: Joseph LeDoux, *The Synaptic Self* (2002); Patricia Churchland, *Touching a Nerve: Our Selves, Our Brains* (2013).

\(^{122}\) Greg. Nyss., *Hom. op.* 30 (PG 44, 249.45–47, 249.58–252.1): ἐνεργὸν τὲ καὶ κινούμενον τὸν γῆν τὸν ἀνδριάντα, καθάπερ ἐκ μηχανῆς τινος ἀποδείκνυσι. … οὕτως ἐνδόδοις τῆς καθέκαστον κινήσεως τε καὶ στάσεως τὴν ὅρμην καὶ τὴν δύναμιν. See my discussion of this text and its sources in chapter two, where I focus on the figure of the “charioteer” in relation to both soul and brain.

\(^{123}\) See chapter two, esp. fn81–fn84.
While Gregory’s comparison of cerebral power to a “mechanism” suggests a separation between the autonomous soul and the instrumental body which is quite in keeping with his overall perspective on the body/soul relationship, his throwaway reference to the charioteer introduces an element of ambiguity. If the human being is like a machine, is the brain a mechanism or the operating agent?\footnote{Schiefsky 2007b, 88 suggests that Gregory raises the question here of “whether the existence of a certain kind of machine does not make the appeal to an immaterial soul superfluous.” Singer 1997 examines Galen’s provision of competing kinds of explanation, and raises the following questions: “Do the different styles of analysis entail conflicting philosophical theories? In particular, is there logical conflict between the different accounts of causation in the physical—and especially, the biological—world that are given in the different works?” (528). Note that Singer is primarily interested in how and why things (such as diseases) are, rather than how and why people behave as they do. Nonetheless, he provides a lucid articulation of the problem with which we are faced here: To what extent, and in what ways, does it matter that authors such as Gregory and Chrysostom adjust their metaphors of human animation to suit different rhetorical contexts? Does the tension between their various metaphors undermine their arguments, or does it fruitfully represent philosophical ambiguity? This ambiguity continues undiminished, of course, in contemporary scientific and religious discourses about the relationship between brain, body, and soul. Weimer 1976 offers a useful comparison between the attempt to integrate “mental” and “physical realms” and the “deep structural ambiguity” (also known as “multistability”) of optical illusions, such as the rabbit/duck.} Chrysostom’s repetition of the verb “slackens” in his discussion of the effects of perfume on the *tonos* of the soul and on the brain suggests a similar ambiguity. Upon exposure to perfume, the child becomes softer and more susceptible to the temptations of sensuous pleasures. Where does the locus of this attraction lie? Both in the brain and in the soul.\footnote{Bassiri 2012 offers a compelling account of a similar ambiguity in Descartes’s theorisation of the pineal gland: “the pineal would need to facilitate, as no other object could, the operational commensurability between Descartes’ two ontologically incommensurate domains and to constitute the site of an absolutely metaphysical encounter too expansive to be satisfied or delimited by mind or matter alone” (245).}

The concern which Chrysostom demonstrates for the health of the brain is tied to the human capacity for rational self-governance. In this way, the preacher justifies his intervention.
into bodily practices as conducive to the health of the soul. In late antiquity, alteration of the brain could influence or impair its control of the rest of the body. This physiological mechanism became a marker of human helplessness and psychic vulnerability: The health of the soul—that is, its resistance to temptation—was constituted in part by a physical change which was not necessarily chosen. In this way, the brain represents the Achilles’ heel of the soul.

We started this section with a consideration of the brain as a soft organ, in need of physical, exterior protection, for which its creator might be celebrated. The brain represents, in these late antique texts, the notion that there is a certain kind of spiritual strength in physical frailty. What Chrysostom’s brief discussion of perfume adds to this notion is a concern for the effects of physical frailty. It is not only that the brain might be crushed or poured out in battle, as so often portrayed in Homeric and historical texts (and in the book of Job), but that the brain might be seduced through the very physiological mechanisms that enabled it to perform its proper functions, its susceptibility to sensory impressions, and its transformation through contact with the outside world. That the slackening of the brain can stand in parallel to the slackening of the tonos of the soul demonstrates an embrace of a kind of psychophysiological causality that we do not find in Plato, in Galen, or even in the Stoics. For Chrysostom, the brain comes to emblematise the necessary vulnerability of the soul as interpenetrated with the human body, such that one’s care of the soul must be mediated physiologically through one’s care of the brain.

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126 The notion that ascetic practices might shape physiological processes, and so diminish psychic passions, or otherwise nourish the health of the soul, is introduced by T. Shaw 1998 with extensive discussion of fourth-century treatises on asceticism and virginity. See also the important work of BeDuhn 1992, which focuses upon Manichaean ascetic discourse.
iii. Alcoholic Vapours

Chrysostom’s discussion of the effects of perfume upon the brain is a unique gem in the surviving corpus of late antique homiletic literature.\textsuperscript{127} With regard to the physiological framework it presumes, however, the vulnerability of the brain to pleasant smells and vapours represents an offshoot of a much more common theme: The painful effects of alcoholic fumes upon the brain, especially when arising from one’s own stomach.

In his homily \textit{Against drunken people}, Basil of Caesarea writes that “whenever the cerebral membranes become full of soot, which wine carries aloft in evaporation, the head is struck by unbearable pains.”\textsuperscript{128} In his angry letter “to the notables of Neocaesarea,” he instructs his addressees to bid farewell to “heads heavy with wine, which are made to see fantasies by the vapour which is carried upward in the swell of intoxication.”\textsuperscript{129} Augustine, in his treatise \textit{On catholic morals}, defends the regular use of old wine by arguing that it is not as bad as the new, which more quickly destroys the sensitive faculty: “so that if it [sc. the wine] has remained in the vat for a little time and has fermented a little bit, it drags down headlong those looking in from

\textsuperscript{127} An important contrast is provided by Clement’s \textit{Paedagogus} 2.8, which argues at length against the use of ointments and perfumes. Following his reasoning that, for example, “oil itself is sufficient to lubricate the surface and to loosen the sinews/nerves \[τὸ νευρῶδες\]” (Clem., \textit{Paed.} 2.8.67.2), Clement takes a step back to consider the usefulness of perfumes. The central function that he indicates is the therapeutical action of perfume upon the brain, a piece of knowledge which he derives from comic verses (Clem., \textit{Paed.} 2.8.69.2–3). In particular, perfumes warm the cold brain (Clem., \textit{Paed.} 2.8.70.3). Cf. Theophr., \textit{Od.} 49–50, which describes the warming, drying, and dilating effects of perfume upon the passages within the body, and then compare ibid., 46, in which the effect of strong perfume is compared to drunkenness and stupor. Perfume was a known site of tension in ancient understandings of how the body was implicated in ethical responsibilities and regimes.

\textsuperscript{128} Basil, \textit{In eb.} (PG 31, 453.6–9): δόταν γὰρ πλήρεις αἱ μῆνιγγες γένονται τῆς αἰθάλης, ἢν ὁ ὦνος ἐξεπαθμηθεὶς ἀναφέρει, βάλλεται μὲν ὀδύνας ἀφορήτους ἢ κεφαλῆς. I am grateful to Susan Holman for pointing out this reference.

\textsuperscript{129} Basil, \textit{Ep.} 210.3.9–11: τὰς οἴνοβαρεῖς κεφαλάς, ἢς ὁ ἐκ τῆς κρατάλης ἀναφερόμενος ἀτμός, εἶτα ἐγκυμαίνων, καταφαντάζει.
above, striking their brains.”

In his *Homily on the holy fast*, Asterius of Amasea describes how fasting lessens pulsation within the brain, which was typically caused by “the darkening influx of vapours.” A sermon *On prayer* spuriously attributed to John Chrysostom informs the congregation that alcohol does not help in prayer, since the “evaporation” (*anathymiasis*) of excessive nutriment enters into the ventricles of the brain and makes reason turbid.

These brief references suggest a general familiarity with the medical teaching that, following consumption of wine, warm vapours filled the head, causing heaviness and pain. Once again most elaborate in his illustrations, however, is John Chrysostom, in his thirteenth homily *On the first letter to Timothy*. Here we find the convergence of concerns about self-governance and pollution or invasion with the broader theme of political governance and the health of the city or community as a whole. The homily explicates 1 Tim. 4:11–18 and 5:1–7; by far the majority of the text, however, focuses upon 1 Tim. 5:6, which condemns the widow who chooses to live in pleasure: “But the widow who lives for pleasure is dead even while she

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130 Aug., Mor. 2, 44.16–9: *nam musto recentiore peruersitas sensuum citius solet accidere, ita ut si aliquando in lacu remanserit aliquantumque ferbuerit, intuentes desuper percusso cerebro praeципites agat.*

131 Ast. Am., Hom. 14.2.4.2–3: *οὔτε τῶν ἄρτηρίων παλλομένων οὔτε τοῦ ἐγκεφάλου δία τῆς ἀναδόσεως τῶν ἄτμων ζωομυμένου.*

132 Joh. Chrys., [De prec.] (PG 64, 461.37–41): *βλέπετε, φησίν, μὴ βαρηθῶσιν αἱ καρδίαι ὑμῶν ἐν κραπάλῃ καὶ μέθῃ. Ἡ γὰρ ἀναθυμίας τοῦ πλῆθους τῶν εἰσπορευομένων τροφῶν περί τὰ κοῦλα τοῦ ἐγκεφάλου μέρη τὸ περὶ αὐτῶν τὸν λογισμόν ἐπιθόλοι χρῆσιμον, αὐτὴν ἐπιταράττουσα τὴν καρδίαν.* Cf. Petr., Sat. 47.6 (Müller 1995), where Trimalchio claims that preventing oneself from releasing wind will send up “vapours” (*anathymiasis*) into the brain, creating a disturbance throughout the body. Note that Petronius’s *anathymiasis* is a Latin borrowing from the Greek word ἀναθυμίας.

133 Gal., [Rem.] XIV 317.12–318.6 K.; Orib., Coll. med. lib. incert. 35.10; Orib., *Lib. ad Eunap.* 4.1.15–16; Aët. Amid., Med. lib. 4.29.5–8, 43.1–10; Steph., Comm. Gal. Glauc. Ther. 1.263.25–264.8. It is important to note that wine, like perfume, could also be construed as beneficial, as Penniman argues: “Thus, in the lexical, medical, and symbolic worlds of Roman antiquity, wine was widely recognised as a reparative, enlivening, and cleansing drug” (Penniman 2015, 197). Focusing upon Cyprian’s argument in *Ep.* 63 for the consumption of alcohol, Penniman carefully contextualises religious arguments within a contemporary medical framework.
lives.” What does it mean to be dead while yet one lives? Chrysostom’s answer is that it is to be drunk.

The core of Chrysostom’s argument against drunkenness is the medical doctrine that alcoholic vapours rise from the stomach into the brain to disturb cognitive processes. He begins, nonetheless, not with medical doctrine, but with dramatic—indeed, epic—imagery.

Just as a sky unbrokenly and continually overcast does not allow the brightness to shine through, in the same way, the vapours of luxury and wine—obsurring, like some rock (σκόπελον), the brain, and settling there a dense cloud (νέφος … πυκνόν)—do not then allow reason to reach through, keeping the drunken man within a deep and moonless dark.

Tropes of reason as light and mental disturbance or drunkenness as a fog were common in antiquity. The most striking aspect of this extended metaphor is, rather, the rock (σκόπελος) which stands in for the brain, which itself stands in for the subject, that is, the “drunken man.” The brain is shrouded from the light of reason, just as the drunken man stands in darkness. This relationship between this pair seems clear, and is also illuminating of the role that the brain might play in conceptions of personhood. As the internal organ of the rational soul, the brain

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134 Trans. NRSV.
136 For example: Gal., Loc. aff. 1.7 (VIII 66–7 K.); Phil., In eb. 155; Basil, Ep. 210.6; id., In eb. (PG 31, 448.15–17); Amphilochius, Or. 7.74–76; Joh. Chrys., In Eph. 13 (PG 62, 93.53–94.16), which similarly compares the “darkness of understanding” (ἡ σκοτομήν τῆς διανοίας) to corrupt humours which enter the eye and obscure vision; Thdt.. De prov. 6 (PG 83, 645.42–6). Although contrast the use of wine in relation to emotional “clouds” in Joh. Chrys., In Eph. 19 (PG, 128.56–58): “For he knows that it [sc. wine] softens asperity and gloom, and chases away cloud” (τὸ γὰρ τραχὺ καὶ σκυθρωπὸν οἶδε μαλάττειν, καὶ τὸ συννεφὲς ἀπάγειν). Nemesius adopts the common Neoplatonist metaphor of the soul infusing the body like sunlight infuses air (Nem., Nat. hom. 3, 40.22–41.4)].
could substitute for the rational organ in toto, that is, for the human body—here, assumed to be the human being.  

But how is a rock (σκόπελος) like a brain? There are two core meanings of σκόπελος: a rock or cliff, typically in the ocean, or a look-out point (a usage playing on the echo of σκόπ- “to see”). Since, within city–body analogies, the eyes were often designated the “scouts” or “look-outs” of the soul, we might interpret the σκόπελος as a central site for perception of and engagement with the outside world. While the eyes perform the activity of “looking out,” the brain supports the analogous activity of reason, which is, in common metaphor, the “eye” of the soul. If the brain is shrouded in mist, then the look-out (the soul) on the look-out point (the brain) can see nothing.

The most famous “cloud-covered” σκόπελοι in antiquity were, however, the “Clashing Rocks” through which Jason passed on his way to Colchis, and which Circe describes to Odysseus as follows: “There are two rocks (σκόπελοι); one reaches the expanse of heaven with its sharp peaks, and a dark blue cloud (νεφέλη) envelops it.” It is perhaps likely that Chrysostom’s congregation, immersed in Homeric poetry in their elementary education and

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137 For commentary upon the metonymy of brain and human subject in contemporary science, see esp. Vidal 2009. The elision is manifest in the work of, for example, Patricia Churchland (e.g., Churchland 2013, Touching a Nerve: Our Selves, Our Brains).
138 LSJ, s.v. ὁ σκοτέλος: (1) “lookout place: hence peak, headland, promontory”; (2) “watch-tower.”
139 Cic., ND 2.56; Amb., Hex. 6, 9; cf. Basil, Hom. Attend. 36.19–37.1, in which the eyes take the “highest look-out spot” (τὴν ὑψηλοτάτην σκοπίαν). Cf. Aug., En. Ps. 41.7 for the more private version of this, in which the mind looks out through the “window” of the eyes.
141 Hom., Od. 12.73–5: οἱ δὲ δῶσε σκόπελοι, ὁ μὲν οὐρανὸν οὐράνια ἱκάνει ὡξείας κορυφῆς, νεφέλη δὲ μὲν ἀμφιβέβηκε κυανέη. For later commentary on this passage, see the following: Aristonic., Sign. Od. 73–5; Eustath., Comm. Hom. Od. 2.8.16–31. For its literary reception, see: Apoll., Arg. 4.924–929; Arg. Orph. 1353–56.
through popular culture, would have heard the echo in Chrysostom’s evocation of a single “rock” (σκόπελον), shrouded in a “thick cloud” (νέφος … πυκνόν).\(^{142}\) That the echo is intentional is suggested by another use of this cluster of imagery, this time with its genealogy more explicitly traced, in a letter by another famous rhetorician of Antioch, and a man claimed to have been Chrysostom’s teacher, the orator Libanius.\(^{143}\) In this letter, which describes the difficulty of achieving calm during the school holiday, Libanius compares his mental distractions to the “continuous cloud” (διηνεκεῖ νεφέλη) which covers the peaks of the two rocks (τοῖν σκοπέλοιν), as “Homer recalled” (Ὅµηρος ἐµνήσθη).\(^{144}\) Was Chrysostom familiar with this letter, had he heard Libanius allude to the line, or was the echo an accident of the saturation of late antique culture in Homeric poetry?\(^{145}\) It is impossible to say for certain, but it is worth observing that Chrysostom’s description of the cloud formed by alcoholic vapours around the brain (ἡ συνεχὴς συννέφεια καὶ διηνεκῆς, “a sky unbrokenly and continually overcast”) contains another echo, this time not of the Homeric passage itself, but of the “continuous cloud” (διηνεκεῖ νεφέλη) in


\(^{143}\) For Libanius as the teacher of Chrysostom, see Soz., HE 6.3 (PG 67, 1315), discussed in Hunter 1989; Malosse 2008; Tonias 2014, 20–4.

\(^{144}\) Lib., Ep. 650.5: ὃσπερ οὖν ἄτερος τοῖν σκοπέλοιν ὄν Ὅµηρος ἐµνήσθη καλύπτει τὴν κορυφὴν διηνεκεὶ νεφέλη, οὕτως ἐμοὶ πραγμάτων ὄχλος ἀεί. According to a search of the TLG, Libanius names Homer (Ὅµηρος) on some 147 occasions. Strikingly, a similar search under Chrysostom’s name turns up just one mention—and that in a spurious text ([In Ps. 118]: PG 55, 678.66–68). This is despite the fact that Chrysostom “knew Homer well” (Rylaarsdam 2014, 98). We might attribute this to a difference in the cultural value system that each teacher sought to impose, rather than in the framework of cultural values in which each was embedded. That is to say, Chrysostom knew Homer as well as Libanius, but chose not to invoke his authority.

\(^{145}\) Cribiore 2013, 27–30 discusses the fraught question of whether Libanius’s letters were “public” or “private,” and concludes that they were “highly personal” (30).
Libanius’s letter. For Chrysostom and Libanius alike, whether through accident or design, thick cloud covering rocky peaks represents the interminable fog of mental distraction.

There are further echoes of the cloud-covered rocks in Chrysostom’s second homily On John, where worldly concerns are said to cloud the soul, just as humours from the brain enter the eye, such that “a dense cloud (νεφέλη … πυκνή) forms in front of the pupil.” He writes as follows:

For, just as the eye, whenever it is pure and translucent, is also sharp of vision and does not easily tire out, even when observing the slightest bodies, but whenever, with some evil humour pouring into it from the head or murky smoke having been borne up from below, a dense cloud forms in front of the pupil, and does not allow it to see clearly even grosser [bodies]; thus it is also with regard to the soul.

According to Galen, psychic pneuma flowed between the front two ventricles of the brain and the eyes through the optic nerves, thereby enabling vision. Unfortunately, this meant that humours and vapours, especially digestive vapours, could also enter through these nerves, thereby damaging vision. The common association of the eye with the rational soul, and of sight with the activity of thought, rendered this latter physiological event a suitable analogue for the passage of disruptive thoughts (for example, concern for one’s business affairs) into the soul.

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146 Joh. Chrys., In Joh. hom. 2 (PG 59, 35.15–6): πυκνή τις πρὸ τῆς κόρης γένηται νεφέλη.
147 Joh. Chrys., In Joh. hom. 2 (PG 59, 35.11–8): Καθάπερ γὰρ τὸ ὅμημα, ὅταν μὲν καθαρὸν ἢ καὶ διαφανές, ὀξυδερκές τὲ ἐστι, καὶ οὐκ ἂν ἀποκάρμισα ῥαδιῶς καὶ τὰ λεπτότατα σῶματα καταμιανθῶν, ἐπειδὰν δὲ χυμοῦ τινος ἀπὸ τῆς κεφαλῆς ἐπιρρέουσαντος πονηρῶν, ἢ κάτωθεν λιγνύος καπνώδους ἀνενεχθέσης, πυκνῆ τις πρὸ τῆς κόρης γένηται νεφέλη, οὐδὲν οὐδὲ τῶν παχύτερων σαφῶς ἀφίησι συνιδεῖν· οὕτω καὶ ἐπὶ τῆς ψυχῆς γίνεσθαι πέφυκεν.
149 Gal., Loc. Aff. 1.2 (VIII 20.13–16 K.): ἀτμῶν γὰρ τινῶν ἐντεῦθεν εἰς τοὺς ὀφθαλμοὺς ἀναφερομένων, περιπήπτουσα τούτων ἡ ὑποκάρμια, ὁμοίως φαντάζεται τῇ κατὰ τοὺς ύποχεομένους (“When some vapors rise from there [sc. the opening of the stomach] to the eyes, the visual pneuma [literally: faculty] meets them and receives the same [sensory] impressions as in suffusion [cataract?] of the eye.” Trans. Siegel 1976). Concern regarding the rising of vapours from the stomach into the eyes recurs passim in this text. Cf. the longer discussion of eye diseases at Gal., Caus. Sympt. 1.2.1–10 (VII 86–101 K.). Eye diseases were common in antiquity (Birley 1992, 111–13; Trentin 2013, 89). For a summary of treatments, see Celsus, Med. 6.6.1.
obscurring contemplation of God. Yet, this analogy lacked a key term: Whence were the disruptive thoughts (φροντίδα βιωτικήν) supposed to derive? As the instrument of discursive thought, the brain is the most obvious candidate. Following this logic, the worldly thoughts travel like vapours and corrupt humours from the brain into the soul.

For the audience to Chrysostom’s homily *On the first letter to Timothy* 13, therefore, the fog settling over the rock, the brain, and the drunken man must obscure clarity of vision (that is, of thought) in the same manner as the “dense cloud” of worldly thoughts in one’s eye, or the “continuous cloud” which envelops Libanius during the school holiday. This is in striking contrast to the image in its Homeric context, where the risk posed by the cloud-covered *skopeloi* depends upon the viewer being located in a ship at sea, and the rocks themselves being hidden from view. Chrysostom’s initial analogy (καθάπερ τινὰ σκόπελον) presumably would have evoked this direction of vision, together with the threat which invisible rocks must pose. We are not, I think, supposed to lose this taste of danger when the rock is transformed into a brain, and then again into a drunken man, although it is now the man–brain–rock which is at risk, rather than the Odyssean sailor looking on. Through these transfigurations, Chrysostom distances his audience from the drunken man, situting those who listen to him on the side of reason. Through this shift, the audience is offered a split perspective: Drinking is dangerous because it prevents you from seeing out (seeing reason), but also because it transforms the brain into a potential rock upon which one might destroy one’s craft. Failure to appropriately take care of one’s brain increases the danger that one’s own body poses to the health of one’s soul.

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150 For the relationship between the eye and the soul, see, e.g., Arist., *DA* 2.1, 412b17–22, with Polansky 2007, 165–67.  
152 Nem., *Nat. hom.* 12, 68.11–13.7.
We saw in chapter two that a common metaphor for the human person was a ship at sea, piloted by a soul. In the version presented by Isidore of Pelusium, the ship represented bodily structures, while the sea stood in for the turbulent swell of bodily humours. In Chrysostom’s sermons, this image is spliced with the canonical analogy of the human person and the city, as Chrysostom shifts from imagining the brain or drunken person as a rock to a scene of urban confusion, as the alcoholic storm breaks into the city:

How great a storm, then, do you think must be within the one suffering such things? How great the pandemonium? For just as, when a flood has come about, and water has risen over the entrances to the workshops, we see the inhabitants in constant panic, contriving to use urns and jars and sponges and many other things to bail out [the water], so that it might not rot through the foundations and render all of the equipment useless. Thus it is with regard to the soul also, that whenever it becomes flooded with much luxury, the thoughts within start to panic, being no longer strong enough to empty out that which has already gathered, and so a great storm is once again born to follow upon the other.

Where previously the wine was imagined as the fog hanging over the sea, it now becomes the water itself which breaks into urban spaces, threatening to flood the buildings within, and sending the inhabitants into panic as they bail the water out of their workshops. Most strikingly, however, this is the first mention in this account of drunkenness of the soul. While one might initially imagine the site of the storm as the body with its various internal organs, Chrysostom reveals at the culmination of his analogy that it is in fact the soul which “has become flooded,” and the “thoughts” (λογισμοί), rather than the members within the

155 Joh. Chrys., *In 1 Tim. hom.* 13 (PG 62, 568.34–46): Πόσον οἴει λοιπὸν ἐνδόν εἶναι τὸν χειμῶνα τὸν ταῦτα παθόντος; πόσον τὸν θόρυβον; Καθάπερ γὰρ πλημμύρας γενομένης, καὶ τοῦ ὑδατος τῶν ἐγγενετικῶν τὰ πρόθυρα ὑπερηφανίσαντος, τοὺς ἐνοικοῦντας ὁρῶμεν ἀεὶ θορυβουμένους, καὶ καδίσκους καὶ ἁμφορέας καὶ σπόγγους, καὶ ἔτερα πολλὰ ἐπινοοῦντας, ὡστε ἀπαντήσαι, ἵνα μὴ καὶ τοὺς θεμελίους διασήμη, καὶ τὰ σκεῦα ἀπαντᾷ ἄχρηστα ἐγκαθίστηκαί ὡστὸ καὶ ἢ ψυχή, ὅταν ὑπέραινόντος γένηται τῇ πολῇ τροφῇ, θορυβοῦνται μὲν ἐνδόν οἱ λογισμοί, τὸ δὲ ἢδη συναρχῆθεν οὐκέτι κενῶσαι ἱσχύοντες, τῷ πάλιν ἐτέρων ἐπεισελθεῖν πολλὺς ὁ χειμῶν τίκτεται.
body, which are stirred up in panic. This does not mean, of course, that the flooding is immaterial: The manifestation of soul within the body required (or perhaps was identical with) the material substrate of *pneuma*. The flooding (or, in another rendering, the “saturation”) of soul with luxury refers most straightforwardly to the effect of alcoholic vapours upon the *pneuma* within the brain. This interpretation is supported by a comparable metaphor in a letter from the same period by the Roman theologian Jerome to his one-time friend, now hated enemy Vigilantius. Accusing Vigilantius of forgetting his approval of Jerome’s preaching, Jerome suggests that a recent sea voyage has damage his opponent’s brain:

Recall, if you will, that day when you leapt up beside me as I preached on the resurrection and truth of the body, stamping your feet and acclamimg my orthodoxy. After you set out on your sea voyage, however, and the rot of bilge water (*sentinae putredo*) reached your innermost brain, you remembered us as heretics.

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156 The collocation of *λογισµοί* (thoughts) and *θορυβεῖν* (to raise a tumult; to throw into disorder) is fairly common in late antique writings, but typically the phrasing is such that one is “thrown into disorder” *in* one’s thoughts, or that one’s thoughts “throw [others] into disorder”; it is unusual for the thoughts themselves to be personified in this way. For example: Orig., *In Joh.* 10.25.148.5: Jesus “dispels the tumultuous plots” (*λογισµοὺς θορυβοῦντας διασκεδάσατα*); Eus., *Comm. in Ps.* 11 (PG 23, 841.10–11): “I have become disturbed in my thoughts” (*ἐθορυβούµην τοῖς λογισµοῖς*); Athan., *Ep. ad Amun* 70.7: “thoughts disturb me” (*λογισµοὶ µε θορυβήσωσιν*); id., *Exp. in Ps.* 72/73 (PG 27, 329.38): “I [the Psalmist] have become disturbed in my thoughts” (*ἐθορυβούµην τοῖς λογισµοῖς*). Exceptions, although not exact, are to be found mostly in Chrysostom’s homilies *On Lazarus*, where the phrase indicates mental distress, typically caused by what one hears: Joh. Chrys., *Laz. conc.* 3.1 (PG 48, 993.3–4): shameful words, entering through the ears, “have sent our thoughts into tumult” (*ἐθορυβῆσεν ἡµῶν τοὺς λογισµοὺς*); ibid., 5.5 (PG 48, 1025.41–42): God’s command to Abraham to sacrifice Isaac was sufficient “to send his thoughts into tumult” (*θορυβῆσαι αὐτοῦ τὸν λογισµὸν*). One other exception with which Chrysostom was perhaps familiar is Basil, *In Ps. 1* (PG 29, 212.39–40): “[the psalm] relieves the panic and surge of thoughts” (*τὸ θορυβῶν καὶ κυμάνων τῶν λογισµῶν καταστέλλων*). Note that, although a good proportion of the texts cited here are commentaries on Psalms, the word *θορυβεῖν* does not appear in the Septuagint translation of this book. It is noteworthy that the phrase occurs nowhere else to indicate the physiological effects of drunkenness.

157 Hier., *Ep.* 61.3: *recordare, quaeo, illius diei, quando me de resurrectione et ueritate corporis praedicante ex latere subsultabas et adiplobas pedem et orthodoxum conclamabas. postquam nauigare coepisti et ad intimum cerebrum tuum sentinae putredo peruenit, tunc nos hereticos recordatus es.* This letter was followed up by a notoriously vituperative (even for Jerome) treatise *C. Vigil.* (PL 23, 353–368), as well as *Ep.* 109, written to a mutual acquaintance Riparius,
The word translated as “flooded, saturated” in Chrysostom’s description of the drunken storm is ὑπέραντλος, which can be broken down into two parts: ὑπέρ- “over, super, excess” and -αντλος “bilge-water, flood.” While the closest translation in light of the context might be “flooded,” the resonance of -αντλος should not be lost. For both Chrysostom and Jerome, the effect of bilge-water is to rot and to corrupt. Jerome locates that corruption in the brain, but assumes its effects on the soul. Chrysostom meanwhile identifies the soul as the locus of water damage, but through the similar process of water (or vapours) entering the brain.

Chrysostom turns swiftly after this passage to focus once again on the body itself. This time, the body is likened both to the city as a whole, and to a single workshop, from the furnace of which smoke belches out:

Someone belches such that even the bystanders’ brains are hurt. As if from some furnace, smoky vapours are emitted from all over the body, through the heat of corruption within. Now, if bystanders are pained, what do you think the brain within is suffering, continually assailed by these vapours? What of the channels of heated and obstructed blood, of those reservoirs, the liver and the spleen? What of the passages of the faeces? It is a hard thing that we take care of sewers so they do not get blocked and spew up their filth, and do everything possible on account of this, thrusting through them with poles and dragging them with mattocks, but that we do not at all purify the drains of our own stomachs, and rather block them up and choke them. And when the filth has risen upward to where the king himself sits—I mean the brain—we do not take any care at all.


\[158\] *LSJ*, s.v. ὁ ἄντλος: (1) “hold of a ship, bilge-water, flood”; (2) “bucket”; (3) “heap of corn.”

\[159\] Chrysostom also emphasises, as we have already seen, the psychological effect of bilge-water, sending one’s soul and one’s thoughts into panic. Cf. Joh. Chrys., *In Act. apost. hom.* 16 (PG 60, 133.26–30) for the “flood” of luxury which sends the sailors and captain into tumult.

\[160\] Water in the brain was a commonly recognised medical problem, although it was typically cured by surgery (see, for example, Aët. Amid., *Lib. med.* 6.1), rather than by ascetic practice. Joh. Chrys., *In I Tim. hom.* 13 (PG 62, 570.20–37): Ἐρευνηταὶ τις τοιοῦτον, ὡς καὶ τὸν ἐγκέφαλον λυχνίασθαι τὸν ἐξοθέν. ἄτοι πάντοθεν ἀπὸ τοῦ σώματος ἵφακέες προέβαλτι καθάπερ ἀπὸ καμίνου τῆς θερμότητος σαζείσης ἐνδον. Εἰ δὲ οἱ ἐξοθάν ὑπὸ δυσχεραῖνουσι, τί
The consumption of wine produces fumes and smells which, like perfume, can alter the brains of others, as well as that of oneself. Once again, wine is a civic problem, although here the source of harm is imagined as located within the individual, rather than as a flood or storm overcoming the city from outside.

It is striking, furthermore, that the drunken belch is envisioned within a civic and an architectural frame. “As if from some furnace,” Chrysostom writes, the fumes of alcohol are released “from all over the body”—that is, from the major orifices and also from the poroi, what we might think of as pores, in the skin. The individual body is part of the urban landscape, a furnace which is necessary to the maintenance of civic life, but which is also a source of danger and discomfort to the populace. The blood vessels, meanwhile, rather than perform their proper task of circulating nourishment within the body, are overcome by wine. The liver and spleen, which act as reservoirs upon which the blood vessels might draw, are similarly affected. The stomach drains like a cesspit into the sewage system of the intestines. Within the body of the drunken individual, physiological and civic disorder converge.

162 Chrysostom’s focus upon the functional architecture of the civic body echoes Galen’s emphasis upon plumbing, as examined in chapter one.

163 Ancient physicians did not teach a doctrine of blood circulation (see Fancy 2013 for a detailed discussion). Instead, blood was generated by the liver out of the food that had been consumed, and was dispatched throughout the body to nourish the various parts (Boylan 2007 provides a clear account). See Gal., Nat. fac. 2 (II 74.1–142.4 K.), for a polemical discussion of how the blood passes from the liver into the blood vessels, and how the liver produces the different humours. Also important is Loc. aff. 5.7 (VIII 350.17–351.14 K.), which examines the role of the
Blake Leyerle has compellingly demonstrated Chrysostom’s predilection for scatological imagery as a tool for shaming his wealthier congregants into giving up their luxury and excess. In the passage considered here, this shame is grounded in more than the personal bodily pollution of diarrhoea. The enmeshment of bodily and civic architecture invokes the sociopolitical obligation of the citizen to maintain civic hygiene as a support for the obligation of the individual congregant to care for the cleanliness and the health of their individual body. Just as one must clean the gutters and prevent the blockage of the sewers in order to create a pleasant environment for all citizens, so one must purify one’s stomach and cleanse one’s bowels in order to participate healthfully in the larger community.

liver as “organ of blood-formation,” and the various affections and blockages which could impair its work. On the damage that imbalance could cause to the blood-producing and metabolic functions of the liver, see Loc. aff. 5.8 (VIII 358.1–361.4 K.). It is noteworthy that, according to Galen, imbalances affecting the liver tend to manifest in the patient’s excrement—see further Loc. aff. 5.8 (VIII 367.4–372.11 K.). See Gal., San. tu. 5.5 for the warning certain kinds of wine will “block up” (ἐµφράττεται) the liver, kidneys, and spleen. Chrysostom’s contemporary, the bishop Gregory of Nyssa, provides a detailed account of how the liver transforms food into blood in the final chapter of his philosophical work On the constitution of the human being: Greg. Nyss., Op. hom. 30 (PG 44, 240.28–256.40).

The faculty of excretion in ancient medical doctrine was considered responsible not only for excrement and urine, but also for nasal mucus and sweat. See, esp., the discussion in Gal. San. tu. 1.12 on the different kinds of excretions, and Loc. aff. 6.2 (VIII 381.3–389.18 K.) for diseases of the stomach, with particular regard to their effects upon the bowels. On interrupted excretion, see Gal., San. tu. 1.12–14, 5.6–7. Diarrhoea, like other kinds of excessive excretion, was caused by imbalance of qualities and humours. Strikingly, Galen describes diarrhoea through comparison to excretions from the brain: Gal., Caus. symp. 3.11.2 (VII 262.18–3.5 K.): οὖν αὐτίκα καὶ κατάρροι καὶ κορύξης ἀτίπος ὁ ἐγκέφαλος, ἐν μὲν ταῖς ψύξεσιν ὡς ὀμοιομερῆς εἰς δυσκρασίαν ἁγόμενος, ὁμοίως δὲ κάρα ταῖς ἐκκαύσεσιν ὡς οργανικὸς δὲ, πληροφυντὸς ὁ ἀνθρώπος ἐν τῇ γαστρὶ κατὰ δυσπεψίαν γίγνεται, τοιοῦτον ἕκατερον τὸν εἰρημένου ἐν ἐγκεφάλῳ. (“For example, the brain is the cause of both catarrh [excess of mucus flowing to the mouth] and coryza [excess of mucus flowing to the nose], as a homeomorous part being brought to an imbalance by cooling and similarly by sun-stroke, and being heated as an organ. Diarrhoea is the sort of affection that occurs in the stomach in disordered digestion, like each kind of things spoken of in the brain.” Translation adapted from Johnston 2006

Leyerle 2009.
One has, in particular, a responsibility to provide a clear lodging for one’s king.

Chrysostom continues: “And although the filth rises upward to where the king himself sits—I am talking about the brain—we do not take any care at all.” The rising sewage we must understand as the alcoholic fumes which rise out of the stomach and into the head. This image is striking insofar as it elides the governing soul into the brain, such that the effects of drunkenness upon the soul might be understood in entirely material terms. As bodily representation of the soul, the brain deserves the honour of a king, but instead, within the polity of a drunken body, experiences pollution and pain.

Chrysostom’s scatological account turns on its head the traditional image of the monarchical soul ruling from the acropolis of the skull. Rather than focusing upon the distribution of political function across the parts of the body, he highlights failure in sociopolitical duty through the breakdown in urban sanitation. Healthcare is, Chrysostom insists, no longer a private concern. How one takes care of one’s body constitutes a sociopolitical, as well as a spiritual, responsibility.

**Conclusion**

The brain, as we have already seen, was a fragile part of the body, susceptible to physical trauma, to pleasant smells, and to the vapours of digestion and strong wine. At the same time it

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166 See, for example, Gal., *Loc. aff.* 5.5 (VIII 342.10–6 K.): φαίνονται δὲ καὶ οὗτοι μετὰ τὰς ἀπεψίαις σφοδρότερον ἀλισκόμενοι τοῖς εἰρημένοις συμπτώμασιν· οἱ πλείους δ’ αὕτων καὶ σπληνώδεις εἰσίν, ὡς λογίσασθαι τίνα, κάκτο τούτοι τοῦ σπλάγχνου συρρέειν εἰς τὴν γαστέρα μοχθηρόν ἰχώρα. ὅσα μὲν οὖν κατὰ τὸν ἐγκέφαλον ἢ τοὺς ὀφθαλμοὺς γίγνεται συμπτώματα, μοχθηρόν ἀναθυμιάσειν ἔπεται χρύσων. “But, following indigestion, these [patients] appear to be taken seized violently by the aforementioned symptoms. Most of them are affected in their spleen, such that one might deduce that a toxic serum streams from this organ into the stomach. Whatever symptoms that affect the brain or the eyes follow upon the evaporation of toxic humours.”
was the internal source of reason, or virtue, and of self-governance. Chrysostom’s emphasis upon the brain as the bodily source of these qualities, which are fundamental components of the health of the soul in the philosophical tradition, reveals the high stakes of cerebral self-care, as he teaches it to his congregation. Damage to the brain compromises one’s ability to govern one’s own actions, affects, and thoughts in a manner conducive to the health of one’s eternal soul.

3. Cerebral Hygiene as a Sociopolitical Responsibility

The previous section examined in detail the vulnerability and the importance of the brain within the individual human being. As we glimpsed, however, the long-standing analogy between the individual body and that of the state or the church gave representations of the brain a political edge. Preachers could use sociopolitical expectations to motivate individual strategies of self-care, but they could also draw upon the “natural” logic of the body to underscore lessons about social and political wellbeing. Engaged in the articulation of new modes of political relationship between the state and the church, they presented themselves as teachers, as shepherds, as fathers, but above all as physicians of the soul, drawing upon medical authority to justify their interventions into individual and political bodies.167

167 The assumption that the early church was a political body is in keeping with contemporary lines of inquiry in late antique scholarship. Cf. Mitchell 1991: 65n2: “That the early churches were political bodies which functioned much as other political/social entities in antiquity (and even modernity) is the presupposition behind the recent works on the sociology of the early church.” With the legalisation of Christianity, bishops and priests interacted with the imperial administration, and imperial administrators—emperors included—intervened (sometimes by invitation, sometimes not) in ecclesial conflicts, particularly those seen to disrupt civic peace. See Barnard 1982, esp. 338; Barnes 1993, passim; Rapp 2005, 23. As positions of ecclesial leadership became more attractive, furthermore, bishops were increasingly drawn from the educated middle and upper classes, ranks that otherwise supplied imperial officials. They also played roles that identical with those of secular leaders, serving as patrons, teachers, judges, and ambassadors. (Holman 2001, 17–8 gives a brief historiography of studies on episcopal patronage.
Political and religious leaders had long presented themselves within a medical idiom. The metaphor of the body politic had stuck for so long precisely because it was a powerful figure for unity and collaboration—for homonoia, as it was termed in political rhetoric. Yet, the structural necessity of the healing metaphor to the Christian worldview, and especially to Christian soteriology, endowed these “physicians of the church” with new authority. Never before had the political leaders of Greece and Rome, in calling for the people to work as a single body under their leadership, also had the religious authority to promise health or diagnose sickness for the communal body in the eschaton. In this new political therapeutics, souls were at stake.168

As spiritual physicians, however, were preachers supposed to serve only the communal body of the church, or the political body as a whole? As leaders within the church, were they in competition with, or subordinate to secular rulers?169 The brain, entrenched in metaphors of the political body from Plato onward, proved a fruitful conceptual tool in envisioning the relationship between priest or bishop, secular ruler, and the body of the city or the state. John Chrysostom’s eleventh Homily on the statues is an illuminating example. In this homily, as we have seen, Chrysostom emphasises the vulnerability of the brain—and the danger that its vulnerability poses to the soul—in order to demonstrate God’s care for human beings, as

On the political role of the bishop in late antiquity, see especially the following: Brown 1992 and 2002; Rapp 2005; Sessa 2012.)

168 This convergence of religious and secular power was not entirely new—a number of honorary priesthoods in ancient Rome (for example, pontifex maximus) had been reserved for members of the senatorial elite. Nonetheless, the combination of popular power (through preaching), political importance (through status and connections), and spiritual authority (through the ability to explicate holy texts and define orthodoxy) created a new context for political leadership. This needed to be worked out—that is, to be articulated and framed for the Christian population. In addition to teaching and training their congregants in Christian doctrines and practices, therefore, preachers were also engaged in forging their own political identity.

169 See, for example, the bishop Ambrose’s tense relationships with Valentinian II and Theodosius I, the latter of whom he temporarily excommunicated. Liebeschuetz 2011 supplies a clear discussion of these events.
manifested in providential design. The question we did not grapple with in our earlier discussion is why this argument about the providential design of the brain appears in this homily, which is ostensibly a celebration of imperial and divine clemency following civic unrest. In order to answer this question, it is essential to understand the political context and argument of the whole.

*Homily on the statues* 11 is a fundamentally political text. Delivered during Lent of 387, it formed part of the ecclesial response to conflict between Emperor Theodosius I and the citizens of Antioch. Following a rise in taxes to support military deployment, the Antiochenes had rioted, bringing down imperial statues. Theodosius was not pleased. For weeks, the citizens waited in fear of reprisals, as it seemed that the city as a whole might be punished. While Flavian, bishop of Antioch, set out to act as ambassador for the city, his subordinate priest Chrysostom stepped in to deliver a series of sermons, alternately chastising, exhorting, and reassuring the populace.

In the eleventh homily, Chrysostom celebrated a report of imperial clemency. His celebration was, however, a little barbed: Interpreting clemency as proof of divine providence, Chrysostom argued that everything which takes place—injurious as well as beneficial—is part of the divine plan, which is for humankind to hold rational sway over the earth. We might read this as a twofold political message: The emperor is part of the divine plan, and the emperor’s plan—that is, to go to war—is also analogous to the divine plan; thus, the angry emperor and the rise in taxes are both providentially imposed toward the well-being of the whole.

As the organ of the *hêgemonikon*, and also as the ruling organ within the body, the brain had a special connection to the emperor. Sensitive to the “complexion of the flesh” and the

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170 The most extensive discussion of this text is van de Paverd 1991.
171 See Brottier 1998.
“constitution” of the whole, the emperor—like the brain—had the ability to plunge the body into sickness and even death. It was therefore necessary for citizens to maintain a certain balance, demonstrating civic obedience to their emperor in order to avoid triggering the impairment of the governing powers. The vulnerability of the brain in this sermon represents both the impact of bodily change upon the soul, and the importance of maintaining appropriate relationships within the political hierarchy. The implicit message here is that one must look after one’s emperor just as one cares for one’s brain; if one’s emperor is subject to injury, then the entire social body is, so to speak, incapacitated. This is a message that we have already glimpsed in reverse, in Chrysostom’s argument that one must care for one’s brain just as one cares for one’s king.

Honouring one’s brain both was and mirrored one’s responsibility within the political hierarchy.

Yet, the brain—perhaps not unlike the emperor—was not only an object of honour and a source of rational authority. The brain was also soft and susceptible to the sensuous pleasures of, for example, perfume. The brain was not only rational but sensuous; not only vulnerable, but also a source of danger. As a material counterpart for the rational soul, it represented well the Stoic idea that virtue and vice are bound together in one unitary source of agency.

This tension is brought out well by a passage from Chrysostom’s seventh Homily on Hebrews, in which he compares old age to kingship, but adds that old age paired with youthful rebellion is worse than youth itself:

Grey hairs deserve respect when one behaves in keeping with going grey; but when one rebels, one is more laughable than the young. … For the old man is a king, if you will, and more kingly than the one who possesses the purple robes, ruling over the passions, and subordinating them in the rank of guards (δορυφόρων). But if he is dragged down and cast from his throne, and becomes a slave of love for money, of vainglory, of ornamentation and luxury and drunkenness and anger and sexual pleasures, adorning his
hair with oil and putting on display a time of life insulted by his deliberate action—of what chastisement would such a man not be worthy?\textsuperscript{172}

Although the brain itself is not mentioned in this passage, the metonymic equation of the old man with the noun “going grey” (ἡ πολιά) suggestively elides the old man into his head, drawing upon the traditional imagery of the head as king in order to establish the respect due to the old.

The identification of the passions as the guards contributes to this identification of the old man with the brain: δορυφόροι (lit., “spear-carriers,” translated here as “guards”) is the word commonly used in late antique descriptions of the sensory organs as the “guards” encircling the man with the noun “going grey” (ὁ δορυφόρους). Although the brain itself is not mentioned in this passage, the metonymic equation of the old man with the noun “going grey” (ἡ πολιά) suggestively elides the old man into his head, drawing upon the traditional imagery of the head as king in order to establish the respect due to the old.

Through his choice to subordinate the passions not merely through the verb κρατῶν (“ruling over”), but also by arranging them “in the rank of [spear-

\textsuperscript{172} Joh. Chrys., \textit{In Heb. hom.} 7 (PG 63, 65.56–8, 66.25–34): Ἡ γὰρ πολιά τότε αἰδέσιμος, ὅταν τὰ τῆς πολιάς πράτην ὅταν δὲ νεωτερίζῃ, τῶν νέων καταγελαστότερος ἔσται. … Βασιλεὺς γάρ ἐστιν ὁ γέφρον, ἐὰν ἐθέλῃ, καὶ τὸν ἄλογῳ ἔχοντος βασιλικότερος, τῶν παθῶν κρατῶν, καὶ ἐν τάξει δορυφόροιν ὑποτάττων τὰ πάθη· ἕαν δὲ ἔληκται, καὶ καταβιβάζεται ἀπὸ τοῦ θρόνου, καὶ χρημάτων ἕρωτας καὶ δόξης κενῆς καὶ καλλωπισμοῦ καὶ τρυφῆς καὶ μέθες καὶ ὤργής καὶ ἀφροδισίων γίνηται δούλες, καὶ καλλωπίζεται ἐλαίῳ τὴν τρίζα, καὶ τὴν ἡλικίαν ὑπὸ τῆς προαιρέσεως υβριζομένην δεικνύ· ποίας οὐκ ἂν εἴη κολάσεως ὁ τοιοῦτος ἁξίος;

\textsuperscript{173} See the brief discussion of this image in chapter two, part two.

carrying] guards” (ἐν τάξει δορυφόρων), Chrysostom invokes a history of understanding the brain as a king guarded by its adjacent members, whether that be the spirit in the “spear-carrying” guardhouse of the heart, or the “spear-carrying” sensory organs, which look out and listen for danger. The old man, equated with his head, is described in terms familiar from presentation of the brain.

Yet it is not the protection but the fall of the brain which interests us here. Unlike the 
*Homily on the first letter to Timothy*, which we examined in part two, the seventh *Homily on Hebrews* makes the king responsible for his own dissolution. Because he has failed to master his passions, he has become a slave to them. It is not the common people filling up the sewers such that the filth within rises up to pollute the palace; the king “rebels”; the king “puts on a display.”

If we align this image with Chrysostom’s comparison of the drunken man to a city in the *Homily on Timothy* 13, we find that the damage that the body or passions might do to the brain (for example, by filling it with vapours) is the result of actions instigated by the brain itself. Yet, is this alignment correct? Is the “king” of *Homily on Hebrews* 7 to be identified with the brain, or rather with the *hêgemonikon* or mind? The answer is not clear, since neither is explicitly mentioned. The emphasis upon kingship suggests the latter; the sidelong references to the head and to the sensory organs suggest the former. Possibly Chrysostom intends us to understand both.

In contrast to the simple division between body and soul which is often reiterated in late antique ascetic discourse, and which is, therefore, often associated with late antique Christian thought, the brain embodies the imbrication of soul in the bodily actions and experiences.\(^\text{175}\) The effect of wine upon the brain seems to come from without, being manifested in the vapours

\[^{175}\text{On the intertwining of body, soul, and spirit in early Christian texts, see Castelli 1992, 142–44.}\]
which rise from the stomach; yet one cannot put the wine into one’s stomach without an impulse from one’s brain, which represents, within the body politic, the governance of soul.

Chrysostom renders this tension clearly in another passage on the damage that excess consumption, this time of food, might do to the brain. In a homily on Matthew, Chrysostom explains that gluttony transgresses the purposes for which the body and its parts were built. The natural function of the mouth is to produce rational speech. Even the stomach, which is made for digesting food, has been designed by nature only to hold the quantity required for sustaining life:

And just as a slave, when ordered to do something beyond what he is able, is often driven to desperation and insults the one who gave the order, so too, the [stomach], when under compulsion, often ruins and destroys the brain itself, together with the other organs.\(^{176}\)

The brain is here imagined as “the one who gave the order,” and also the one who is subject to harm. The physiological mechanism underlying this image is the painful impact of digestive vapours upon the brain; nevertheless, the situation is imagined in terms of an interpersonal conflict.

In an article on gluttony, Chris de Wet interprets this passage as an example of the rhetoric of slavery which, he argues underpins Chrysostom’s articulation of the relationship between the parts of the body.\(^{177}\) According to de Wet, this rhetoric establishes the brain (here, the head) as ruler, and the stomach (represented here by the passions, including desire) as the slave: If the brain fails to control the rapacious stomach, then the stomach masters the brain, in which case, the priest must provide therapeutic intervention by inserting himself as the agent of


\(^{177}\) See de Wet 2015 for Chrysostom’s “rhetoric of slavery,” which de Wet terms “doulology.”
De Wet’s analysis assumes a motif common within the Greco-Roman philosophical traditions, that the relationship between body and soul is to be understood according to a master–slave binary. Within this framework, the soul rules over the body; if the body rules over the soul, then the individual becomes a slave to desire. What de Wet does not point out, however, is that Chrysostom does not, in this passage, locate desire within the stomach. Rather, desire springs from the one who gives the commands, that is, from the brain. To the extent that the stomach reverses the master–slave relationship, it is to lash out at and to destroy the brain, on the grounds that the brain itself has desired too much. The saturnalian transgression that the master-punishing slave represents is not the enslavement of the brain to the desires of the stomach, but the enslavement of the brain to its own appetites. The governing soul, embodied in the brain, is responsible for, and not beleaguered by, the desires which it enacts through the bodily parts.

The brain, as representative of the hêgemonikon or mind, demonstrated the impossibility of the Platonist ideal of a purely “rational” soul. The brain, as a bodily part, was necessarily fallible. As the locus of sensation and the source of voluntary motion, the brain represented the full range of human action and experience. The brain might become the “slave” to desire, but the starting-point for indulgent actions was the desire enacted by the brain. The fallibility of the brain is echoed in a passage we have already touched upon, in Chrysostom’s Homily on John 2. This is the sermon in which Chrysostom compares the distracting cares of everyday life (φροντίδα βιωτικήν) to the humours which pour from the head, that is, from the brain, into the eye. I argued in part two that the movement of humours from the brain into the eye traced the

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178 Holmes 2013, 274–79 discusses the challenge that the body and its sicknesses pose to self-responsibility.
179 Trott 2013, 180–82 provides an important discussion of this theme in Aristotle’s discussion of slavery (Arist., Pol 1, 1254a–b). See also Plat., Tim. 34.
passage of the cares from the brain into the soul. The medical model invoked here suggests that
the brain, as organ of the activity of thinking, might diverge in its activities from the intellect,
which had the goal of contemplating the divine. In other words, even the thoughts produced by
the brain are potentially damaging or distracting. The brain might be an instrument of rational
thought and even of government, but it can, through its bodily nature, misthink and, indeed,
misgovern. This is why cerebral hygiene is so important, both for one’s own spiritual health, and
for the health of the community as a whole.

It is striking, in the Homily on John 2, that Chrysostom does not consider the purification
of the eye or the mind to be the task of a “spiritual physician.” Instead, he insists that
congregants must cleanse their minds of distracting thoughts before they enter the “spiritual
surgery” (ιατρείον ... πνευματικὸν) of the church assembly. Such mental hygiene is necessary,
“so that we might heal here whatever wounds we bring in from outside, and not so that, having
gathered other [wounds] here, we might thus depart.” The worrisome thoughts which flow into

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180 Cf. Joh. Chrys., Pecc. fratr. non evulg. 1 (PG 51.353.30–354.29); In Gen. hom. 1.1 (PG
53.22.9–12) and 32.1 (PG 53.293.9–14). The only other extant text from the fourth century or
earlier that uses this phrase is the anonymous Act. Phil. 13.4, although it was to become more
popular in later centuries. For more common was the phrase “surgery of the soul” (ιατρείον
ψυχῆς) which was familiar in Greek literary culture, and which was also used by Chrysostom’s
contemporaries. See, especially Epict., Diss. 3.21.20 (on sophists who attempt to teach without
philosophy, that is, to open a iatreion without knowing how the medicaments are to be applied),
and 3.23.30.1–2: “The school of the philosopher, men, is a surgery” (ιατρείον ἐστὶν, ἀνδρὲς, τὸ
τοῦ φιλοσόφου σχολεῖον). Epictetus is building on Plato’s foundational text Phdr. 270b, where
the “rhetorical art” is compared to that of the doctor. See esp. 270b4–5: “It is necessary for both
[doctor and rhetorician],” Socrates explains, “to analyse a nature, that of the body on the one
hand, and that of the soul on the other” (ἐν ὑμοτέραις δέι διελέσθαι φύσιν, σώματος μὲν ἐν τῇ
έτερᾳ, ψυχῆς δὲ ἐν τῇ ἐτέρᾳ). For a brief discussion of this passage and its influence on
Chrysostom’s approach to the care of the soul, see Rylaarsdam, 2014, 19, with reference to Phdr.
261a7–8, where Plato describes the art of rhetoric as “psychagogy.”

181 Joh. Chrys., In Joh. hom. 2.5 (PG 59, 36.16–19): Ἰατρείον γὰρ ὁ ὁικὸς ὁὗτος ἔστηκε
πνευματικὸν, ἵνα ἀπερ ἄν λάβωμεν ἐξώθην τράυματα, ἐντεύθεν θεραπεύσωμεν· οὐχ ἴνα καὶ

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the soul like humours from the brain are not the “wounds” which Chrysostom seeks to heal. Rather, they form the conditions for creating further wounds within the church itself. Purifying one’s eye, one’s soul, one’s brain of worldly cares is a hygienic measure necessary to prepare oneself for the spiritual surgery, and for healthy membership within Chrysostom’s church.

Within the framework of the conventional analogy between the individual body and the body politic, the potential of misgovernment by the brain offers an important commentary on the role of the priest in secular politics. Just as the priest-physician might intervene in the relationship between stomach and brain, by exhorting the individual (as a whole) to act with sobriety, so the late antique priest might act as ambassador between the people and the emperor. While Chrysostom preached his *Homilies on the statues* to the Antiochene populace, their bishop Flavian was arguing with Theodosius I for clemency in his response to the civic disorder. Nor was this an unusual role for “holy men”—to the contrary, it was an aspect of the ancient patronage system which holy men, priests, and bishops alike adopted in some degree.

In his reading of gluttony as a fight between the stomach and the brain, de Wet argues that, from Chrysostom’s perspective, it is the brain’s duty to control the lower organs. When the brain fails and is overcome, the preacher intervenes, much like a physician, vicariously assuming the role of the brain in order to institute proper governance within the human being. I have suggested here that the conflict between the stomach and the brain is not so much the brain being overcome by the stomach, as a cycle of action and reaction, in which the brain must take responsibility for desire, but is nonetheless the victim of the violent repercussions which result. The emperor, like the brain, must be careful not to impose orders out of excessive desire; after

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The word that I translate as “surgery” (ιατρείον) literally means a “place of healing.”
all, the rebellion of the lower members might be construed not only as a lack of care for one’s brain, but also as an indication that a natural boundary has been breached. The intervention of the priest is designed to reorder relations between the organs, establishing not so much a fixed power binary as a dialectic of mutual support, in which each member plays is naturally appointed part.

Conclusion

John Chrysostom was deeply concerned about the vulnerability of the brain. This concern was motivated by a part-Stoic, part-Galenic understanding of the correlation between psychological and physiological events. Earlier in this chapter, we focused on the consequences of this model for individual self-care, and our conclusion was this: According to John Chrysostom, one must conform to certain, communal practices of self-care (for example, the avoidance of alcohol) in order to ensure the health of one’s brain, and therefore of one’s soul. In this latter section, I have argued that Chrysostom used the vulnerability of the brain and its connection to the governing part of the soul to insert himself into the role not only of spiritual physician for the individual, but also of spiritual physician for the political community. As the “brain” within the political body, the emperor was both sensitive to the imbalance of the whole, and could cause that imbalance through impetuous or irrational activities. The therapeutic expertise of the preacher-physician is brought to bear upon political conflict via metaphors of the brain.

Conclusion

Cerebral vulnerability performed several different functions in late antique Christian rhetoric: It encouraged certain patterns of behaviour and self-care as proper to Christian congregations and communities—that is, as spiritual and sociopolitical responsibilities. It also provided material for
articulating the necessary weakness of the rational human being, as a creature able to choose
salvation or destruction, capable of divine contemplation, but enmeshed in material form.
Furthermore, and in conflict with this dichotomy between mind and soul, it embodied the
intermediary nature of the human being, as participating in both body and mind, animal and
divine. As bodily sign of the soul, the vulnerability of the brain represented the vulnerability of
the human soul as operating through, and only through, the human body.

The vulnerability of the brain and its connection to soul justified priestly interventions in
bodily self-care. Yet, preachers were also entangled in the political project of establishing their
own role as public speakers and public teachers, as ambassadors and patrons, as administrators of
the emperor and as officials of God. The necessity of medical attention to the health of the brain
invariably invokes the relationship of the brain to the other bodily parts. That is, the health of the
body politic is defined by the relationships between its parts, and above all, between its parts and
the brain. Through the language of medical expertise and therapeutics, the preacher Chrysostom
establishes his political role as physician to the communal body of city, church, and state.
IV.

Brain Fever and the Health of the Soul

Q. In Victorian literature, people who experience a severe emotional shock sometimes become ill with “brain fever,” characterized by a high fever with delirium, lasting for weeks. Is this an actual medical condition or an invention of novelists?¹

Philosophers of medicine have long taught us that the body enters our perceptual sphere when it is in pain: We forget we have a stomach until it hurts; our nerves function unobserved until they get trapped.² In his book The Absent Body, Drew Leder argues that the brain conceals itself from human experience more than any other organ. One’s inability to see or feel one’s own brain, he suggests, has contributed to the tenacity of dualism, wherein the activity of the brain is assigned to an invisible, incorporeal being, that is, the soul.³ What is, fundamentally, “[a]n experiential disappearance is read in ontological terms.”⁴ It is, then, perhaps only when we suffer from cerebral illnesses—malfunctions that result in dropped memories, involuntary movements, glitches in thought—that we recall the embodiment of our mind, and its reliance upon the healthy operation of our brain.⁵

² Leder 1990 is the most influential work of scholarship on this question. For a classic rendition of the idea, see Freud’s The Ego and the Id (1923), 25–6 (quoted and discussed in Butler 1993, 28–30): “Pain seems to play a part in the process, and the way in which we gain new knowledge of our organs during painful illnesses is perhaps a model of the way by which in general we arrive at the idea of our own body.”
⁴ Leder 1990, 115.
⁵ In an ethnographic study of non-experts diagnosed with affective disorders, E. Martin 2010 notes that most of her target population assumed that their condition was in some way related to their brain, although the extent and mode of cerebral interference in affective life and social interactions varied significantly among participants.
This final chapter will focus upon the malfunction of the brain and its relationship to the self. As Leder’s account leads us to expect, damage to the functions associated with the brain—thought, perception, memory, and voluntary motion—brought the brain into the perceptual sphere of ancient Christian writers and their readers. In this way, it provided new resources for, while also challenging, nascent Christian understandings of the self. Damage to the brain signified limitations upon the human capacity for self-determination, above all, the capacity to determine one’s own spiritual health. In chapter three we considered the vulnerability of the brain to modes of bodily care (or rather, neglect) deemed inappropriate by the church—excessive food, wine, perfume, and sex. This chapter concerns itself with the problem of what happens when the individual goes too far in the other direction, striving for spiritual hygiene through their own acts of virtue. It is in these cases of excess virtue, as we will see, that the limits of the brain emerge in sharp definition.

At the centre of my discussion is the ancient disease phrenitis, which was considered to be among the most dangerous of mental illnesses. At its core, phrenitis was defined as a strong but short-term fever accompanied by delirium. Explanation of its bodily causes varied among medical authors, but by late antiquity it was most commonly associated with the brain. Thus, the fourth-century Spanish poet Prudentius could write without clarification: “This is your grave and rational speech, Marcion—or, rather, this is obviously the phrenitis of an astonished brain.”

6 On the Foucauldian language of “care” in studies of early Christian asceticism, see the opening to chapter three.  
7 The most important work on phrenitis in recent scholarship is McDonald 2009. See also Byl and Szafran 1996.  
8 Prud., Ham. 123–4: haec tua, marcion, grauis et dialectica uox est, immo haec attoniti frenesis manifesta cerebri. Marcion is the second-century Christian (heretic) to whom Prudentius’s entire poem, called “The Origin of Sin,” is addressed. Dykes 2011 provides a helpful account of this text. See especially Dykes 2011, 209, which discusses the verse in question: Dykes translates
As Prudentius reveals, phrenitis was not a purely medical term. It commonly denoted deviance from a social norm. In Christian texts, phrenitis was often invoked to denounce one’s religious opponents—pagans, Jews, Manichaeans, as well as any Christian, such as Marcion, considered heretical in doctrine or practice. Used in this sense, it was similar to the modern English words “crazy” and “mad,” which cover the whole gamut of alien phenomena, from deep-fried Mars Bars to religious extremism and random acts of violence.

This is one example of the “medical metaphor,” which, as we saw in the previous chapter was prevalent in early Christianity, and which has received increasing attention in recent years. Eric Fournier writes in a forthcoming article on the language of amputation: “The point of this Christian medical metaphor was to present all that is undesirable to Catholic Christianity (pagans, Jews, atheists or heretics) as disease, and everything that is good (God, Christ, and, by extension, Scripture and clerics) as remedy.” In one sense, then, the metaphorical application of “phrenitis” to forms of deviance might be best understood as operating on a continuum alongside gangrene, ulcers, and other more obviously physical disorders. At the same time, organic mental

frenesis as “lunacy” and cerebri as “mind”—provocative choices, given that Prudentius is critiquing the dualist theodicy of Marcion, that is, the notion that evil is a material force, rather than a privation or deficiency of the good. Dykes notes (209fn87) that frenesis/phrenesis is a rare word also found in Juv., Sat. 14.136 (also manifesta phrenesis, but without any reference to the brain), Cels., Med. 3.18, and Sen., Ira 1.13.3, in which phrenitis, like anger and inebriation, gives human beings a boldness and strength that is not desirable.

9 This is, of course, unique neither to phrenitis nor to antiquity. The seminal text on madness as the medicalisation of deviance is Conrad and Schneider 1980.

10 This practice was adopted at the highest levels of Christian politics, and not with phrenitis alone. See, for example, Constantine’s use of the word “madness” (μανία) to describe Donatist Christians in his letter to Caecilian of Carthage (Eus., HE 10.6.5). Like phrenitis, mania was a mental disorder caused through damage to the brain; unlike phrenitis, however, mania has few symptoms distinct from other mental disorders recognised in the ancient canon, and it is partially for this reason that I focus on phrenitis in this chapter.

11 See the introduction to this dissertation, fn18.

12 Fournier forthcoming.
disorders bridge the literal and the metaphorical in ways that gangrene and amputation simply cannot. Just as perpetrators of mass shootings are not merely called “crazy,” but are in fact assumed to suffer from mental illnesses, so phrenitis continued to carry—in sermons, in polemical pamphlets, in letters, in poems—the baggage of its medical definition. When Christians called heretics “phrenetic,” they did not only intend the generic insult “crazy,” but were also invoking the structuring metaphor of early Christianity, that is, salvation as the healing of the soul. The traffic between literal and metaphorical interpretations of phrenitis is crucial to understanding the complex role of the body in early Christian understandings of sin.

Exploring the medical character of phrenitis gives us access to a discourse of “crazy” that was riven by tensions peculiar to late ancient Christianity but resonant up to the present day: If deviance is a product of the body, then in what cases and to what extent can a person be held responsible for actions deemed inappropriate or destructive? Should disease or malfunction of the brain mitigate the punitive consequences of “bad” behaviour? Is deviant action or thought


14 Merideth 1999, especially chapter four: “Disease retained its traditional negative connotations as something that needed to be healed and Christianity was the ‘medicine’ that cures” (153). See also Crislip 2013, 3–4, quoting Adolf Harnack: “Christianity never lost hold of its innate principle; it was, and it remained, a religion for the sick. Accordingly it assumed that no one, or at least hardly any one, was in normal health, but that men were always in a state of disability” (Die Mission und Ausbreitung, 78, trans. Moffatt, Mission and Expansion, 109) The cure, as Crislip clarifies, was salvation. For the reinvigoration of this metaphor in contemporary theology, see Charry 2010, 50: “Augustine’s therapeutic soteriology is the primary handhold for the current effort to reclaim a Christian doctrine of happiness.”

15 For contemporary reflection upon this question, see the essays collected in Freeman and Goodenough 2009.
always to be assigned to a malfunction of the body?\textsuperscript{16} Where is there room, in this model, for responsibility and the notion of the will?\textsuperscript{17} These questions were as prominent in early Christian literature about orthodoxy, sin, and salvation as they are in contemporary discussions of criminality, social justice, and neuroscience.

Part One presents phrenitis from the perspective of ancient medicine. Here I argue that phrenitis signified above all the loss of self-governance through bodily damage. Illnesses of the brain undermined one’s ability to control one’s own thoughts or actions, and so challenged the generally accepted notion that self-responsibility belongs to the soul. Part two focuses upon ascetic practice and the role of the brain in setting limits to human feats of endurance. Here we consider in particular the story of Macarius of Alexandria, an Egyptian monk who compromised his ascetic discipline in order to ensure the health of his brain, since he considered this to be a fundamental bodily condition of human reason. Through close reading and comparison with other stories about ascetic limitation, I propose that phrenitis is to be interpreted as a bodily correlate to and partner of vainglory, the affect that endangers every perfected monk. Through the discourses of phrenitis and of vainglory, early Christians disciplined ascetic practitioners to respect the limitations that bound them to the community of their fellow human beings. Part three, finally, turns to the polemical application of “phrenitis” as a diagnosis of religious difference in the sermons of perhaps the most popular Christian teacher in late antiquity, the bishop Augustine of Hippo. For Augustine, I argue, the loss of self-governance represented by

\hspace{1cm} \textsuperscript{16} Rafter 2008 discusses the history of scientific investigation into whether certain features of the brain produce “criminal” activity.

\hspace{1cm} \textsuperscript{17} One contemporary answer is suggested by the concept of “neuroplasticity,” as discussed in Schwartz and Begley 2003. See also the work of Patricia Churchland (especially Churchland 2013), a philosopher who grounds her work in a neuroscientific paradigm.
phrenitis offers a model for understanding how a person might be sick but refuse treatment, and so for articulating a mode of therapy that operates without the patient’s consent.

1. Phrenitis in Ancient Medical Literature

Phrenitis was a disease of hot and dry swellings. Thus, the anonymous author of the doxographic work *On chronic and acute diseases* records the opinions of the late-classical physicians Praxagoras and Diocles that phrenitis was, respectively, a “swelling of the heart” or a “swelling of the diaphragm.” Galen, meanwhile, insisted upon the localisation of phrenitis in the region around the brain. In his work *On symptoms and causes*, he explains that “phrenitis does not arise simply through hot humors, but also is brought about with inflammation in the brain and cerebral membranes.” Another of his works, *On trembling, palpitation, convulsion, and rigor*, describes how phrenitis is triggered by “dryness” of the nerves, and then adds that phrenetic symptoms are caused by “swelling of the roots of the nerves” (that is, in the brain). By late antiquity, hot and dry swellings around the brain were de rigueur, as we discover in the explanation of phrenitis provided by Alexander of Tralles in his sixth-century medical handbook: “Genuine phrenitis comes about, then, from yellow bile, whenever this is produced and creates swelling around the brain and the membrane within it.”


19 Gal., *Caus. symp.* 2.7.2 (VII 202.11–3 K.): ἡ μὲν γὰρ φρενῖτις οὐδὲ ἀπλῶς ἐπὶ θερμοῖς συνίσταται χυμοῖς, ἀλλὰ μετὰ τοῦ φλεγμονῆς ἐργάζεσθαι κατὰ τὸ τὸν ἐγκέφαλον καὶ τὰς μῆνιγγας.

20 Gal., *Trem. palp.* (VII 641.9–10 K.): ταῖς δὲ φρενίτισι καὶ διὰ τὴν φλεγμονῆν τῆς ἄρχῆς τῶν νεῦρων ἐπεται τὸ σύμπτωμα. According to Sider and McVaugh 1979 this treatise was written between 169 and 180 CE (183), and was translated into Syriac in the ninth century (184).

21 Alex. Trall., *Ther.* 13, 509.11–3: γίνεται τότεν ἡ ἀκριβῆς φρενίτις ἀπὸ τῆς ἕσανθῆς χολῆς, ὅταν αὐτὴ ἀναδιοθείσα φλεγμονῆν ἐργάσηται περὶ τὸν ἐγκέφαλον ἢ τὴν ἐν αὐτῷ μῆνιγγα.
reports the view of the physician Posidonius, writing probably in the fourth century CE, that “phrenitis is the swelling of the membranes around the brain, together with acute fever, and brings with it derangement and wandering reason.”

Yet, the localisation of phrenitis continued to be contested. As we saw in chapter two, Gregory of Nyssa uses the (old-fashioned) localisation of phrenitis in membranes “in the side of the body” (the φρήν, identified elsewhere as the diaphragm) to support his argument that the mind (νοῦς) is not confined within the brain. Gregory’s argument reveals the continued salience of phrenitis as a tracer for mental function. Yet, it is also somewhat disingenuous: In all likelihood, Gregory knew full well that most medical authors after Galen localised phrenitis in the region of the brain, or at least assumed that the affection, if it began elsewhere, was mediated through the brain in its impact upon psychic faculties. Thus, the (probably) seventh-century medical author Theophilus Protospatharius wrote in his work On pulses: “For indeed, one [kind of] phrenitis is swelling around the brain, which is the primary seat of the disease; but another phrenitis is inflammation of the diaphragm, whence the brain receives [the affection] through sympathy.”

Galen was aware of this multiplicity of localisations, and had even theorised the difference between the “primary seat of the disease” (a part which is damaged, with impairment to its faculties) and the “secondary seat of the disease” (a part whose faculties are impaired

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24 Theophil. Protosp., De puls. 69.1–6: μία μὲν γὰρ ἐστὶ φρενίτις φλεγμονή τῶν περὶ τὸν ἐγκέφαλον, ἣτις κατὰ πρωτοπάθειαν γίνεται: ἄλλη δὲ ἐστὶ φρενίτις φλεγμονή τοῦ διαφράγματος, ἐξ ὡς μεταλαμβάνει ὁ ἐγκέφαλος κατὰ συμπάθειαν. Theophilus’s date is impossible to pin down with much certainty (Temkin 1962, 110).
through sympathy with another part that has been damaged). In some cases, according to Galen, delirium could indeed be caused by the secondary impairment of cerebral faculties through sympathy with damage to the diaphragm; yet, phrenitis was set apart from other mental disorders “because the brain is not involved by sympathy during this disease but by the disease itself, as the primary seat of the disease.”

Why is Galen so keen to press this point home? One answer is suggested by Galen’s discussion of therapy for phrenitis earlier in the treatise:

Since almost the same therapy is applied to diseases which befall both the brain and the meninges, the question about the organ in which the principal activities of the soul resides [sc. the brain or the meninges] promotes speculation rather than the best therapy. However, if the soul were located in the heart, the matter would be different. Assume, for instance, that phrenitis arises when yellow bile has accumulated and putrefied in the body of the heart. Would it not seem ridiculous to pour rose oil mixed with vinegar over the head?

That is, the conventional treatment for phrenitis indicates both the location of the disease itself and also the location of the soul, to be precise, the soul’s ruling part (the ἱέγεμονικόν). The assumption which underlies this model is that damage to the part of the body in which the governing part of the soul resides will impair the governance of the soul. While this might seem

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25 Discussed at length in Gal., Loc. aff. 1.3 (VIII 30.7–31.17 K.).
26 Gal. Loc. aff. 5.4 (VIII 329.12–4 K.): οὐ γὰρ ἐπὶ συμπαθεῖα κατ’ ἐκεῖνη τὴν νόσον ὁ ἐγκέφαλος πάσχει, ἀλλὰ κατ’ ἰδιοπάθειάν τε καὶ πρωτοπάθειαν κάμει. Cf. Gal., Loc. aff. 5.2 (VIII 304 10–7 K.), on the endurance of reason even when the heart is fatally inflamed: μὴ διασχόντος δὲ τοῦ τρόφοντος εἰς κολλίαν, ἀλλ’ ἐν τῷ σώματι τῆς καρδίας στηριχθέντος, οὐ μόνον αὐτὴν ἐκείνην τὴν ἡμέραν, ἐν ἐν τρωθέντες ἔτυχον, ἄνευ δυσμάτων ἀλλὰ καὶ τὴν ἐπιούσαν νύκτα, φλεγμονῆς δηλονότι λόγῳ τοῦ θανάτου γενομένου· φρονοῦσί γε μὴ ἀπαντείς οὕτω, μέχρι περ ἢν ἡ τούτου, μαρτυροῦντος καὶ τοῦτον τῷ φαινομένῳ τῷ παλαιῷ δόγματι περί τοῦ τὸ λογιζόμενον τῆς ψυχῆς ὡς εἴναι κατὰ τὴν καρδίαν.
27 Gal., Loc. aff. 2.10 (VIII 130.10–8 K.): παραπλησίας οὖν τῆς θεραπείας γενομένης ἐπί τοῖς αὐτοῖς νοσήμασιν ἐγκεφάλῳ τῷ καὶ μὴν γεγένεται ἰονηκῇ μάλλον ὡς ἵππους ἔστιν ἕπειρ καὶ τὰς ἵππας ἰερός, ἐν ὡσπέρ τῷ ἤγενον· ὅπως ἐν κατὰ τὴν καρδίαν ἐστιν, ἀλλ’ ὡς τῷ πρῶτῳ διαφέρουσα, όρθρο γὰρ ὡς χολῆς γενέσας τὴν φρενίτεν ἐν τῷ σώματι τῆς καρδίας ἀθροισθείσης τῷ διάμαρτις, ἅρ’ οὖν ληστεῖν ἄν δοξεῖν ὁ καταντλεῖν κελεύειν ὁξυρρόδινῳ τὴν κεφαλήν. Translation adapted from Siegel 1976.
to belabour the point, it is precisely this assumption that Gregory of Nyssa denies. The relationship between bodily damage and psychic impairment was both compelling and contested in late antiquity.

Phrenitis is flagged similarly as an index for philosophical beliefs about the localisation of the *hêgemonikon* in a late antique treatise *On acute diseases* by the North African medical author Caelius Aurelianus.²⁸ Of phrenitis, Caelius writes as follows:

> Now some say that the brain is affected, others its foundation or *basis*, which we translate as ‘seat’, others its membranes, others the heart, others the apex of the heart, others the membrane which encloses the heart, others the artery which the Greeks call the *aortê*, others the thick veins, others the diaphragm. But why go on when we can easily clarify the matter by stating what these writers really had in mind? For in every case they hold that the part affected in phrenitis is that in which they suspect the ruling part of the soul is situated.²⁹

As we saw in chapters one and two, the “ruling part of the soul” (Lat. *animae regimen*; Gk. ἡ *γεµονικόν*) was a technical term which developed within Stoicism, but which by the second century CE had become common currency.³⁰ It referred above all to one’s capacity for self-governance, through the faculties of thought, perception, and voluntary motion, which Stoic

²⁸ Caelius Aurelianus is best known as translator and adaptor of the second-century Greek Methodist physician Soranus of Ephesus; however, there is current consensus that he takes intellectual agency in presenting and transforming the ideas that he translates (Dysert 2006–07). Caelius’s translation thus provides us with a glimpse of long-standing medical traditions and their reception in late antiquity.

²⁹ Cael. Aur., *Acut*. 1, 1.8.53–4: *aliqui igitur cerebrum pati dixerunt, alii eius fundum sive basin, quam nos sessionem dicere poterimus, alii membranas, alii et cerebrum et eius membranas, alii cor, alii cordis summitatem, alii membranam quae cor circumtegit, alii arteriarum eam quam Graeci aorten appellant, alii venam crassam, quam iidem phleba pachian vocaverunt, alii diaphragma. et quid ultra tendimus quod facile explicare possimus, si id quod senserunt dixerunt? nam singuli eum locum in phreniticis pati dixerunt in quo animae regimen esse suspicati sunt*. My discussion of this passage is informed by van der Eijk 2005a, 119–23.

³⁰ See chapter one, part one, fn25 (Stoic origin of the term) and fn26 (generalisation of the term outside of Stoicism).
authors located in the heart.\textsuperscript{31} In the account that Caelius provides, the Stoic term has been
generalised to explain the arguments of medical and philosophical authors even prior to the
existence of the Stoics.\textsuperscript{32} Arguments about the localisation of phrenitis function as an index of
where any given author believes the ruling part of the soul to be located.\textsuperscript{33}

Yet, despite the impressive list compiled by Caelius Aurelianus, explanations for
phrenitis had by late antiquity polarised around the two options presented by Gregory of Nyssa,
Galen, and Theophilus Protospatharius: the brain (\textit{locus of \textit{phronēsis}}) and the diaphragm (known
in older Greek as the \textit{phrên} or \textit{phrenes}).\textsuperscript{34} The reason for this is suggested by Galen, again in his
work \textit{On the affected parts}: “The ancients all named the boundary below the chest the “\textit{phrenes},”
either because it simply occurred to them, or, as some think, because sick people suffer damage
in their intelligence [φρόνησιν] when this part is inflamed.”\textsuperscript{35} The diaphragm was a key
contender with the brain for the site of phrenitis on two counts: First, it remained a known fact
that delirium is sometimes caused through damage to the diaphragm. Second, the old word for

\begin{footnotesize}
\begin{enumerate}
\item[31] See chapter one for the Stoic \textit{hégemonikon}, inc. fn238 for the Stoic localisation of the
\textit{hégemonikon} in the heart.
\item[32] Cf. Aët., \textit{Plac.} 4.2–7 on the localisation of the \textit{hégemonikon}, as presented (Greek and English)
in Mansfeld 1989, 314–20 (Diels 1879, 391). See also van der Eijk 2005a, 123: “Recent research
into the principles and methods of doxography ... has revealed that the question ‘What is the
leading principle [sc. \textit{hégemonikon}] in man and where is it located?’ more or less assumed a life
of its own in late antiquity, separate from the scientific context from which it originated.” On
doxography, see especially Runia 1999a; on the invocation of medical authorities in doxographic
writings, see Runia 1999b.
\item[33] Thus, Mansfeld cites Caelius’s discussion of phrenitis as a doxographic moment similar to
\item[34] Sullivan 1988 provides an in-depth discussion of \textit{phrên} and \textit{phrenes} in Homeric texts, with
particular focus upon their psychological function. See also Onians 1951, 23 (for an argument
that the \textit{phrenes} are the lungs), Ireland and Steel 1975 (a study of the \textit{phrenes} as anatomical
organ and psychological faculty, resulting, however, in aporia), and Snell 1977 (the \textit{phrenes} in
their psychological aspect as related to \textit{phronēsis}).
\item[35] Gal., \textit{Loc. aff.} 5.4 (VIII 327.13–6 K.): τὸν δὲ κάτω τοῦ θώρακος ὀρον οἱ μὲν παλαιοὶ πάντες
ὀνύμαζον φρένας, εἰδ' ἀπλῶς ἑπελθὼν αὐτοίς, εἰδ', ὡς τινες οἶονται, διότι φλεγμαίνοντος αὐτοῦ
\end{enumerate}
\end{footnotesize}
diaphragm (phrenes) shared its root, by accident or design, with the name of the disease.\textsuperscript{36}

Gregory of Nyssa clarifies

For we have also learned that insanity comes about not from heaviness of head alone, but also from the membranes underlying the ribs being in a pathological condition, just as the experts in medicine explain the sickness of the rational principle, calling the affection “phrenitis,” since phrenes is the name of those membranes.\textsuperscript{37}

According to Galen, the phrenes perhaps get their name from phronēsis (“intelligence”), which is lost when they suffer from phrenitis. According to Gregory, meanwhile, phrenitis gets its name not from phronēsis at all, but rather from the phrenes.

The symptoms of phrenitis function, more than any other disease, as a tracer for the operation of the hēgemonikon within the body. Thus, Galen sets phrenitis apart from other forms of delirium to emphasise that it is never caused by damage to the diaphragm; thus, Gregory chooses to name phrenitis as the kind of delirium caused by damage to the membranes in the side of the body, rather than invoke delirium as a generic symptom compromising reason. As Caelius Aurelianus points out, there is something particular about phrenitis that sets it apart from other forms of mental illness as an illness of the hēgemonikon, rooted in damage to the primary organ

\textsuperscript{36} See discussion, with references, in McDonald 2009, 1, where the variant localisations are explained, at least in part, as the consequence of semantic split: “The name phrenitis appears to be derived from a combination of the suffix ‘-itis’, denoting disease or affection, and phēn, a part of the body that, from Homeric times, was thought to be responsible for reasoning and intelligent thought. Although the phrēn gradually lost its association with intelligence, becoming known only as the diaphragm, the term phrenitis remained.” Cf. Rocca 2003, 19fn9.

of soul. Whenever it appears in religious and philosophical texts, therefore, phrenitis automatically evokes the problematic relationship between brain, body, and soul.  

This becomes clearer when we consider the role that phrenitis played in the articulation of ventricular localisation as a model for thinking about the relationship between brain and soul. We saw in chapter two that ventricular localisation, which appears in none of Galen’s extant works, is explained by Aëtius of Amida in the context of a discussion of phrenitis that he attributes to the (probably) fourth-century physician Posidonius. We also saw that the same theory of ventricular localisation is “proved” by Nemesius of Emesa through reference to a case history that Nemesius borrows and adapts from Galen’s discussion of phrenitis in his treatise On the affected parts. Let us return to this story for a moment:

For the senses of some of those with phrenitis are preserved and thought alone is harmed. Galen records such a sufferer of phrenitis who, when a certain wool-worker was working in his house, sprang up and took some glass utensils, rushed to the windows, and, calling each of the instruments by name, asked the passers by if they wanted it to be thrown down below. When the bystanders said they did want it, he first hurled each of the utensils and then asked those present if they wanted the wool-worker to be thrown down. They thought the affair was a joke and so said that they did want it. So he took the wool-worker and pushed him down from above. This man was sound in his sensations, for he knew that the things were instruments and the man was a wool-worker, but his thinking was diseased.

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38 The conclusions of Pigeaud 1987 inform my argument here: Mental illnesses such as phrenitis, Pigeaud argues, were somatic conditions that produced psychological effects, thereby raising philosophical questions about the relationship between bodily and psychic wellbeing (Pigeaud 1987, 126–27).

39 To recap, ventricular localisation is the assignment of distinct faculties (in Posidonius and Nemesius, these faculties are perception/imagination, thought, and memory) to separate ventricles within the brain. The psychic pneuma which is refined within these ventricles becomes the instrument of the faculties, feeding into the nerves where appropriate.

40 Aët. Amid., Med. lib. 6.2.6–23.

41 Nem., Nat. hom. 13, 70.12–22: τὸν γάρ φρενιτιζόντων οἱ μὲν τὰς αἰσθήσεις διασώζουσι τῆς διανοίας μόνης βλαβείσης. τοιοῦτον ἀναγράφει Ἡλενός φρενιτίσαντα, ὡς ἀριστογοῦ τινος ἐργαζόμενον παρ’ αὐτῷ, διανοιστὰς καὶ λαβόν ύζελινα σκεύη ἐπὶ τε τὰς θυρίδας ὑρήμας ἡρώτα τοῖς παρὶντας ἐκαστὸν τῶν σκευῶν ἐξ ὀνόματος καλῶν, εἰ θέλουσιν αὐτὸ ρηθῆναι κάτω· τῶν δὲ παρεστῶτων βούλεσθαι φησάντων πρῶτον ἡκόντισε τῶν σκευῶν ἐκαστὸν, εἶτα ἥρετο τοὺς
Phrenitis is critical to understanding the implications of the ventricular model. It is not only that the activities of soul might be mapped onto a physical instrument; more importantly, selective damage to that instrument now also explains the impairment of those specific faculties, without dismissing or compromising the soul itself. Phrenitis explains destructive behaviour as a symptom of bodily disease.

Yet, does this mean that the phrenetic patient is no longer to be held responsible for throwing the wool-worker out of the window? Does inflammation of the middle brain ventricle undermine his capacity for intentional action? These questions, which Nemesius himself does not raise, trouble the smooth surface of his text. Several chapters later, Nemesius comes to a definition of intentional and non-intentional action. He defines non-intentional action quite strictly as that which is compelled through physical force\(^42\). If person A moves the hands of person B to throw the wool-worker out of the window, person B does not act intentionally. If person C scares person B into throwing the wool-worker out of the window, person B does act intentionally. Is phrenitis more like person A, physically moving person B to violence, or is it more like person C, psychologically coercing person B, who nonetheless acts on his own accord?

Nemesius’s silence with regard to this question destabilises his subsequent evaluations of intentionality. This is not accidental. Phrenitis, which was a bodily disability affecting self-governance, blurred the boundaries between soul and body. This ambiguity reflected broader Christian anxieties about the role of the body in the salvation or damnation of the soul.

\[\text{παρόντας, εἰ καὶ τὸν ἐριουργὸν βούλοιντο ῥιφῆναι: τὸν δὲ παιδίαν νομισάντων εἶναι τὸ πράγμα καὶ διὰ τοῦτο θέλειν φησάντων, λαβὼν ὀθήσεν ἄνωθεν κἀκεῖν τὸν ἐριουργὸν. σὺντος τὰς μὲν αἰσθήσεις ῥιγαίνει, ἥδει γάρ ὅτι σκεψὶ τὰῦτα καὶ ἐριουργὸς οὕτως, ἐνόσθε δὲ τὴν διάνοιαν.}\]

\[^{42}\text{Nem., Nat. hom. 30, 94–6. For Nemesius’s synthesis of philosophical and Christian ethical concerns, see Streck 2005.}\]
2. Asceticism, Vainglory, and Phrenitis

In part one, we focused upon medical accounts of phrenitis and their theorisation in Christian anthropologies. Part two turns, in contrast, to an examination of bodily practices, and in particular to the role of phrenitis in moderating care of the brain among Christian ascetics. It has occasionally been noted that excessive ascetic practices were thought to lead to madness. Yet, there has been no systematic exploration of the relationship between ascetic practice and phrenitis. As I demonstrate in this section, phrenitis was in fact a central trope for late antique Christian writers who sought to define the limits of asceticism. In this sense, it played a role similar to vainglory, a passion of the soul which was known to threaten the spiritual health of expert ascetic practitioners. Excessive ascetic endurance could provoke both phrenitis and vainglory, which mapped neatly onto one another as different kinds of inflammation—of one’s brain and of one’s pride. This triangulation provides a framework within which to make sense of phrenitis as a model for spiritual disorder, which we will explore further in Part three. We will begin, however, with the story of an individual, that is, the celebrated Egyptian monk Macarius of Alexandria.

i. Self-Discipline and the Health of the Brain

Early in the fifth century CE, Palladius of Galatia—then bishop of Helenopolis—wrote a description of the journey he had undertaken through Egypt as a youth. This text, known as the Lausiac History, became one of the most popular accounts of the early Christian monastic movement. It included dialogues with, and biographical accounts of the ascetic communities and
hermits whom Palladius had visited. Among the stories Palladius tells is that of Macarius of Alexandria, who lived in the monastic community known as Kellia, “the Cells,” deep within the Nitrian Desert. Faithful to the hagiographical tradition, Palladius recounts feats of bodily endurance as an index of Macarius’s spiritual prowess. “Here is another practice of his,” Palladius reports: “He determined to dispense with sleep, and he told us how he did not come inside under a roof for twenty days, that he might conquer sleep, being inflamed by heat and shrivelled up with cold by night.”

As historians of early Christianity have long pointed out, bodily injury was a sign of holiness within the ascetic paradigm. Indeed, cultivating and enduring illness was an ascetic discipline in its own right. It is surprising, therefore, when Macarius sets a limit to his task of endurance, on the grounds that he risks damaging his body and becoming sick. Palladius reports:

He added this: “Unless I had come inside under a roof and got some sleep rather quickly, my brain would have so dried up as to drive me into delirium for ever after. But I conquered so far as depended on me, and I gave way so far as depended on my nature, which had need of sleep.”

43 There are useful introductions to the Lausiace History in Meyer 1965, 3–16; Vivian 2004; Brakke 2006, 134–44. Harmless 2004, 275–308 provides broader contextualisation.
44 Kellia: Harmless 2004, 275–76. Note that this is different to the Egyptian village of Kellis, where a substantial quantity of papyri has been found (Gardner 1996). For an introduction to Macarius of Alexandria, see Vivian 2004.
45 Pall., Hist. laus. 18, 3.1–4: Ἀλλὰ αὐτοῦ ἁσκησις· ἐκρινεν ὑπὸ περιγενέσθαι, καὶ διηγήσατο ὅτι ὦκ εἰσῆλθεν ὑπὸ στέγην ἐπὶ εἴκοσι ἡμέρας Ἰνα νικήσῃ ὑπὸν, τοῖς μὲν καύμασι φλεγόμενος, τῇ δὲ νυκτὶ στυφόμενος τῇ ψυχρότητι.
46 Perkins 1995 opened the way for this line of thought, with her work on the role of suffering in early Christian identity formation. Crislip 2013, esp. 15–35, brings together suffering caused by ascetic behaviours (for example, injury) with unprovoked bodily illness, and argues that the latter could be utilised as a form of ascetic practice.
47 Pall., Hist. laus. 18, 3.4–8: Καὶ ὃς ἔλεγεν ὅτι, “Εἰ μὴ τάχιον εἰσῆλθθον ὑπὸ στέγην καὶ ἐχρησάμην τὸ ὑπόν, οὕτω μου έξηράνθη ὁ ἐγκέφαλος, ὡς εἰς ἐκστασίν με ἐλάσαι λοιπόν. Καὶ τὸ μὲν ὅσον ἐπὶ ἐμοὶ ἐνίκησα· τὸ δὲ ὅσον ἐπὶ τῇ φύσει τὴν χρείαν ἔχουσῃ τοῦ ὑπον παρεχόρησα.”

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Whilst Macarius might seek the burning and shrivelling up of his body as a whole, he is careful not to permanently injure his brain, lest he should lose control of his mind.\(^{48}\)

Macarius’s concern for the health of his brain represents a tension described by the historian Andrew Crislip in his work on illness in ascetic narratives: “Illness may render bodily self-control impossible and culminate in the annihilation of the body and the self. But this may have a transcendent and salutary effect as well,” functioning simultaneously as an opportunity for “mimesis of Christ’s suffering” and “the clearest possible signifier of God’s wrath.”\(^{49}\) Illness was a form of suffering attractive to late antique Christian ascetics. At the same time, illness of the brain or mind compromised the self-control necessary to ascetic identity.\(^{50}\)

Macarius’s concern that he might dry out his brain echoes ancient medical accounts of phrenitis. Consider this account by the Byzantine encyclopaedist Paul of Nicaea:

> What is phrenitis? It is acute delirium with acute fever, because the brain is parched of moisture, from which sleeplessness also follows. Such an illness arises from a hot and dry imbalance in the case of burning fever, when vapours are dispersed from the brain. For the brain is dried out by the departure of moisture and the excess of dryness. And continual sleeplessness follows these things, together with disturbance of thought.\(^{51}\)

\(^{48}\) See Clark 1997, 215 for the observation that ascetic writers often report that renunciation, especially of food, sleep, and human company, can lead to madness. Gal., Loc. aff. 3.7 (VIII 165.17–166.1 K.) reports a case of a young man who nearly lost his memory and who damaged his rational faculty “through love of toil and sleeplessness during his studies.” Another example of both sleeplessness and excessive study leading to fear that the cerebral membranes might be damaged can be found in Joh. Chrys., Ad Stag. 2 (PG 47, 450.15–18). For an important study of sleep asceticism in late antiquity, see Dossey 2013. On the politics of “sleeplessness” as an ascetic discipline, see Caner 2002, 126–57.

\(^{49}\) Crislip 2013, 35.

\(^{50}\) Nonetheless, “playing mad” was a recognised strategy amongst, in particular, desert ascetics. In some contexts, (the appearance of) insanity might represent the most authentic renunciation of the things of this world. Krueger 1996 provides an extended discussion, exemplified by Symeon the Holy Fool, whose seventh-century biography was to become the origin for a literary tradition. Palladius provides an earlier example of a nun who feigns madness, and so is rejected by her fellows: Pall., Hist. laus. 34.1–2.

\(^{51}\) Paul. Nic., Med. lib. 10: Τί ἐστι φρενίτις; ὄξεια παρακοπῆ μετὰ ὀξέος πυρετοῦ, ἥραινομένου τοῦ ἐγκεφάλου ύγροῦ, ὅθεν καὶ ἄγρυπνία παρακολουθεῖ. γίνεται δὲ τὸ τοιούτον πάθος ἀπὸ
The qualities of hot, cold, dry, and moist were fundamental to the ancient conception of human health and disease.\textsuperscript{52} One’s bodily temperament was the blueprint and the explanation for one’s physical and mental condition. Galen had written an influential but controversial treatise called *That the faculties of the soul follow the mixtures of the body*, in which he called into question the necessity of theorising an incorporeal soul, and instead proposed that individual character supervenes upon the measure of one’s temperature and humidity.\textsuperscript{53} In an introductory work, *The Art of Medicine*, Galen describes the effects of bodily temperament localised within specific organs. Here is how he describes the compound imbalance of a brain that is hot and dry: Persons who possess such brains “are lacking in excretions, endowed with acute perceptions, extremely insomniac, and become bald early.”\textsuperscript{54} A hot and dry brain is conducive to insomnia. This is perhaps a hint as to why Macarius goes out into the desert to avoid sleep. The physiological effects that he both seeks and fears will help him stay awake.

Insomnia is also, as we saw in Paul’s account, a symptom of phrenitis.\textsuperscript{55} This was already conventional wisdom by the second century, when Galen attributed it to “many physicians.”\textsuperscript{56} As

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\textsuperscript{52} Lloyd 1964.

\textsuperscript{53} Gal., *QAM* 3 (IV 774.19–775.2 K.): εἰ μὲν οὖν τὸ λογιζόμενον ἐνδος τῆς ψυχῆς ἐστιν, θνητὸν ἔσται. καὶ γὰρ καὶ αὐτὸ κράσις τῆς ἐγκεφάλου. “If, then, the reasoning faculty is a form of the soul, it must be mortal: for it too will be a mixture, namely a mixture within the brain.” Trans. Singer 1997.

\textsuperscript{54} Gal., *Ars med.* 8 (I 326.10–1 K.): ἀπέριττοι τὲ εἰσὶ καὶ ἀκριβεῖς ταῖς αἰσθήσεσι, καὶ ἁγμυνητικύστατοι, καὶ φαλακροῦνται ταχέως. Trans. Singer 1997. On the introductory function of this work, see Temkin 1962, 102–03, where *The Art of Medicine* is listed as one of four Galenic texts used to teach medicine in late antique Alexandria.

\textsuperscript{55} For a brief discussion with references chiefly to the Hippocratic corpus, see McDonald 2009, 40–3.
Galen writes in his distinction between diaphragm-based delirium and brain-based phrenitis: “No few symptoms precede the condition of the patient. And these are all called phrenetic signs, and all my predecessors have described them. Among these one can find sleeplessness and certain dreams disturbing on account of vivid hallucinations.” The same symptoms are described also by Alexander of Tralles, who states that insomnia and vivid dreams signify the onset of phrenitis, a warning that all is not well in the region of the brain. Macarius’s fear that lack of sleep and a dried-out brain might push him toward delirium makes sound medical sense.

Yet, the trajectory of causation in Macarius’s text gives us pause for thought. Macarius does not discover himself to be sleepless, diagnose himself with impending phrenitis, and withdraw from the desert. Rather, he seeks out insomnia by simulating the conditions of a phrenetic brain, and only then worries that in doing so he might bring on the full-blown illness. I dwell on this point because it highlights an aspect of phrenitis that is salient to our broader question of the relationship between cerebral health, responsibility, and self-care: individual behaviour affects the condition of one’s brain. While one’s mental condition—that is, reason,
self-governance, and perhaps even salvation—is dependent upon the health of one’s brain, this does not mean that the mind and soul are at the mercy of the body. The consequence is rather that one has—like Macarius, and also like the congregations and citizens we examined in chapters three and four—a responsibility to look after one’s brain.

Excessive ascetic practice was a problem with which ecclesial leaders of the fourth and fifth centuries were familiar. As historians of asceticism such as Richard Valantasis and Elizabeth Clark have observed, the religious authority cultivated by expert ascetic practitioners posed a challenge to the official hierarchy of the church. Among ascetic practitioners, there was concern that individual self-discipline might undermine the very purpose of disciplinary practice. The discursive response to this was often to suggest that over-enthusiastic asceticism was the consequence of demonic attacks or vainglory. Vainglory was the one passion known to target the otherwise perfected monk. In ascetic texts, it functions as a limit upon the

2003. Yet, the role of the brain in mediating practices of bodily and psychic self-care in antiquity has not been explored in any depth, and has only rarely been pointed out. Indeed, the one example I am aware of is de Wet forthcoming, which notes, as I discuss in chapter three, that John Chrysostom includes the brain among the organs affected by gluttonous eating, such that what food and drink one consumes might enslave one’s soul through its primary instrument. Valantasis 1995; Clark 1999. See also Bynum 1995a, 90–1, for a discussion of scholarship (especially Brown 1988 and Clark 1990) on the question of whether ascetic practices might produce social distinctions in the eschaton. Caner 2002 discusses at length the social tensions exacerbated by voluntary poverty.

As illustrated by the Life of Saint Syncletica 53, quoted and briefly framed in Castelli 1992, 140–41. See also Crislip 2013, 105 on chapters 49–52 of the same text: “Syncletica reads the illness of the ascetic as a possible sign of demonically inspired asceticism. In fact this type of ascetic self-hurt is a ‘disease’ (nosos), the ‘ultimate and chief of all evils’, brought on ‘through an excess of asceticism’.”

Brakke 2006, 68–9; Crislip 2013, 81–108.

Foremost among theorists of vainglory was Evagrius of Pontus. See, for example, the description of Tilby 2005, 149: “For Evagrius vainglory is the most subtle of the thoughts to afflict the monk because it flourishes particularly in those who try to live good lives. Vainglory resonates with the nagging sense that virtue ought to be rewarded. It seeks publicity and praise. The demon of vainglory even brings to the monk’s imagination the sound of admiring crowds as
individual’s self-discipline.\textsuperscript{65} One must abstain not only from food, sleep, and other bodily comforts or necessities, but also from ascetic practice itself, when that practice threatens to make one vulnerable to the demon or disease of vainglory. Strikingly, this spiritual disorder could sometimes manifest as a bodily disease. In this case, disease was not an ascetic practice, but a symptom of an illness of the soul. Andrew Crislip expresses the paradox thus:

Illness, thus, for some or many in the decades following monasticism's rapid rise in popularity pointed to an askēsis gone awry. It raised a number of fundamental questions. Did the illness of the ascetic indicate the obverse of Antony's or Paul's health, a failure of asceticism? Did illness come from the devil or from god? How much responsibility should the individual ascetic, or his peers, bear for illness? Should one be allowed to choose such an injurious lifestyle?\textsuperscript{66}

This is, precisely, the dilemma faced by Macarius. What are the moral and ethical implications of choosing “an injurious lifestyle” that might result in the loss of his reason and his inability to further pursue ascetic practice? Macarius’s identification of his brain as the part of his body that he is afraid to injure suggests that not only bodily illness but also specific kinds of bodily illness worked to limit the scope of ascetic discipline.

It was the brain’s involvement in voluntary motion that made it so central to a lifestyle of self-control. When Macarius claims that he “conquered so far as depended on [himself],” but “gave way so far as depended on [his] nature,” he draws a distinction between intentional action (that is, the sphere of the psychic \textit{pneuma}, which carries out the activities of the rational part of the soul) and involuntary motion (the province of vital and natural \textit{pneuma}, each of which

\textsuperscript{65} See my discussion of John Chrysostom’s therapeutic treatise to the monk Stageirios for a discussion of how the threat of vainglory might discipline a monk’s engagement in ascetic practice (Wright 2015).

\textsuperscript{66} Crislip 2013, 84.
perform unconscious activities such as digestion and pulsation). While the brain may be the organ of reason and site of the psychic *pneuma*, the healthy functioning of the brain is dependent upon physiological processes not subject to conscious control. Fragile organ of the *hégemonikon* that it was, the brain remained the final frontier of ascetic discipline.

The threat of cerebral malfunction, like that of vainglory, served as a conceptual tool for disciplining the affective orientation of the ascetic practitioner. We see this parallelism more clearly if we consider another story that follows shortly after Macarius’s withdrawal from desert exposure: “Having disciplined my entire lifestyle as I desired, I then came to another desire, wherein I wished at that time to keep my mind for five days only undistracted from God.” Once again close to perfection, the anchorite tries to surpass the limitations of his human nature. This time he seeks the transcendence not of the human need for sleep, but of human community itself:

After deciding upon this, I closed the cell and the courtyard so that I might not give answer to any human being; and, starting from the second hour, I took my stance. I ordered my mind, then, saying: “Do not descend from the heavens; there you have

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67 For this distinction, which was first systematically theorised by Galen, but which has its roots in Hellenistic medicine and philosophy, see Nemesis, *Nat. hom.* 26, 87.17–9: Διαιροῦσι δὲ καὶ ἄλλοις τὰς κατὰ τὸ ζῷον δυνάμεις καὶ τὰς μὲν λέγουσι ψυχικὰς, τὰς δὲ φυσικὰς, τὰς δὲ ζωτικὰς· ψυχικὰς μὲν τὰς κατὰ προαίρεσιν, φυσικὰς δὲ καὶ ζωτικὰς τὰς ἀπροαιρέτους. For commentary on the distinction, see Sharples and van der Eijk 2008, 145fn731 and 157fn798. A different set of resonances is suggested in Hunt 2012, 11: “Within the Christian tradition a natural/contra-natural dichotomy is inferred in analysing how the desert Fathers, for example, seek to integrate the materiality of the human body within the totality of Christian experience.”

68 This conclusion is in keeping with recent revisionary work of Aristotle’s psychology: “although thinking, according to Aristotle, is perhaps itself a non-physical process, bodily factors have a much more significant part to play in it than has hitherto been recognised” (van der Eijk 2005b, 207).

69 I use “discipline” here in a pedagogical, rather than regulatory sense.

70 Pall., *Hist. laus.* 18, 17.1–4: Ἀλλότε πάλιν διηγήσατο ὅτι Πάσαν πολιτείαν ἢν ἐπεθύμησα κατορθώσας, τότε εἰς ὅλην ἦλθον ἐπιθυμίαν δὲν ἡθέλησά ποτε πέντε ἡμέρας μόνον τὸν νοῦν μου ἀπερίσπαστον ἀπὸ τοῦ θεοῦ ποιῆσαι.
angels, archangels, the powers above, the god of the whole; do not descend below heaven.”

Once again, however, Macarius’s attempt to discipline himself into superhuman reverie is thwarted—this time by a demon. Strikingly, the demon appears in fiery form:

And when I had endured for two days and two nights, I provoked the demon so much that it became a flame of fire and entirely consumed everything of mine in the cell, with the result that even the little rush mat on which I had taken my stance was burned up, and I thought that I myself would go up in flames. At last I was struck by fear and stepped aside on the third day, unable to render my mind undistracted; I descended instead to contemplation of the cosmos, so that delusional vanity (τύφος) might not be reckoned to my account.

The “hot and dry inflammation” that strikes Macarius on this second occasion is not a medical but an affective disorder. Or is it? The word tuphos (“delusional vanity”) was a technical term in medicine, philosophy, and psychology. Cynics used the term commonly to denote the “smoke and vapours” of popular ideas. The Hippocratic text Internal affections describes tuphos as a fever causing excessive heat, loss of bodily control, extreme pain, and—when one is at the point of death—confidence in one’s own health. It was also used more broadly to refer to “vanity,”

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71 Palladius, Hist. laus. 18, 17.4–9: Καὶ κρίνας τοῦτο ἀπέκλεισα τὴν κέλλαν καὶ τὴν αὐλήν, ὡστε μὴ δοῦναι ἄνθρωπον ἀπόκρισιν, καὶ ἔστην ἀρξάμενος ἀπὸ τῆς δευτέρας. Παραγγέλλω οὖν μου τῷ νῷ εἰπόν· “Μὴ κατέλθῃς τῶν οὐρανῶν· ἐχεις εἰκὶ ἀγγέλους, ἀρχαγγέλους, τὰς ἀνῶν δύναμες, τὸν θεὸν τῶν ὅλων: μὴ κατέλθῃς ύποκάτω τοῦ οὐρανοῦ.”

72 Palladius, Hist. laus. 18, 18.1–8: Καὶ διαρκέσας ἡμέρας δύο καὶ νύκτας δύο, οὕτω παρώξυνα τὸν δαίμονα ὡς φλόγα πυρὸς γενέσθαι καὶ κατακαίσαι μου πάντα τὰ ἐν τῷ κελλίῳ, ὡς καὶ τὸ ψάθθων ἐν ὃι εἰστήκειν πυρὶ καταφλέχθηναι καὶ νομίσαι μὲ ὁ δῶς ἐμπίπταμαι. Τέλος πληγεῖς φόβῳ ἀπέστην τῇ τρίτῃ ἡμέρᾳ, μὴ δυνηθείς ἀπερίσπαστον μου τὸν νὸν ποίησαι, ὅλα κατηλθὼν εἰς θεωρίαν τοῦ κόσμου, ἵνα μὴ μοι λογισθῇ τύφος.

73 Desmond 2008, 244.

74 Hipp., Int. 39.1, 3–13: Νούσημα ὅπερ καλείται τύφος ... Ἐνθέως οὖν αὐτὸν πυρετοῦ ἔχουσιν ἰσχυροὶ καὶ καύμα ὦξὺ, καὶ ὑπὸ τοῦ βάρους ἀσθενεῖ καὶ ἀκρησία τῶν σκέλων, καὶ ἐκ τῶν χειρῶν ἰχρεός μάλιστα γίνεται· καὶ ἡ γαστήρ ταράσσεται, καὶ τὰ υψοχώρεοντα δύσωδεα, καὶ στρόφος ἰσχυρός ἐπιγίνεται. Ταῦτα τέ πάσχει, καὶ ἤν τις ἄναστήσει θέλη αὐτὸν, οὐ δύναται ὁρθοδοθεῖαι, οὐδὲ τοῖς ὀφθαλμοῖς ἀνορθηνία δύναται ὑπὸ τοῦ καύματος, καὶ ἤν τις αὐτὸν ἔρωτα, ὑπὸ τοῦ πόνου ἀκούον τοῦ δύναται ἀποκρίνασθαι. Οκόταν δὲ μέλλῃ ἀποθνῄσκειν, ὃ ὄξυτερά τε
which is how Clarke’s widely-used translation of Palladius’s *Lausiac History* renders the word.\(^{75}\)

Thus, the late antique lexicographer Hesychius explains *tuphos* as “boastfulness, swelling, vainglory (κενοδοξία).”\(^{76}\)

By late antiquity, *tuphos* was commonly associated with vainglory across Christian and non-Christian texts alike. A pertinent example is provided by the second-century satirist Lucian of Samosata in his *Dialogue of the Dead*. Entering the underworld, the Cynic philosopher Menippus encounters Empedocles, who is blistered and burned from his death in the fiery crater of Mount Etna. When Menippus asks Empedocles why he jumped into the volcano, Empedocles names the mental illness “melancholy” (μελαγχολία). Menippus rejects this diagnosis: “No, by Zeus! Rather, it was vainglory (κενοδοξία) and vanity (τῦφος) and much drivel.”\(^{77}\)

Macarius dreams of burning up. He becomes scared, consequently, that *tuphos* (burning fever; vanity) might be “reckoned to his account.”\(^{78}\) We can read this as a renarration of his story about the avoidance of sleep: Feverish delirium and vainglory are explicitly aligned as pathological effects of disciplining one’s body and mind to surpass ordinary human limitations.

### ii. Advice to Ascetic Women

Macarius and Palladius were not alone in these concerns. In 414, their contemporary, the bishop Augustine of Hippo, wrote a treatise *On the good of widowhood* to the wealthy widow Juliana,

\(^{75}\) Clarke 1918, 83.

\(^{76}\) Hsch., *Lex.* 1705: τῦφος· ἀλαζον[ε]ία, ἔπαρσις, κενοδοξία.

\(^{77}\) Luc., *Dial. mort.* 6.4.12–3: Οὐ μὰ Δί’ ἄλλα κενοδοξία καὶ τῦφος καὶ πολλὴ κόρυζα.

\(^{78}\) The Greek word used here (λογισθῇ) evokes the Evagrian term *logismos* (“thought”), which describes the category of psychological conditions of which vainglory is one example. Corrigan 2009, 73–101 offers a lucid account of the Evagrian model.
who had fled to North Africa in the wake of the Visigothic sack of Rome in 410. Written a couple of years after Juliana’s arrival on his shores, this treatise sought to dissuade Juliana from adopting celibacy as a mode of spiritual purification:

But as for those who condemn the marriages of women who have been widowed, even if they exercise their own continence marvellously and fervently, restraining themselves from many things that you yourself enjoy, do not let them lead you astray on this account, such that you think what they think, even if you are not able to do as they do. For no one wants to suffer from phrenitis, even if she should see that the energy of the phrenetic person (phrenetici) is stronger than the energy of those who are healthy.

Augustine’s opponents are the British theologian Pelagius and his associates (the “Pelagians”), who argued that human beings are born free from sin, such that one might (indeed, should) earn one’s salvation through obedience to Christian discipline. Augustine seeks to impose a different kind of discipline on Juliana—the moderation of her ascetic perfectionism in acknowledgement of her inescapable imperfection, that is, her need for Christ’s grace. His strategy for discounting Pelagian views repeats centuries of Christian and Greco-Roman polemic: The authority of his opponent is undermined by the diagnosis of a mental disorder. Yet,

79 On the flight of Roman aristocratic women to the shores of North Africa, see Brown 2000 [1967], 286–87. I use Hombert’s date for this treatise (see, e.g., the dating provided in Hombert 2000, 121).

80 Aug., B. uíd. 15.19: nam qui uidoatarum feminarum nuptias damnant, etiamsi continentiam suam multarum, quibus tu uteris, rerum abstinentia mirabiliter et ferventer exerceant, non ideo te seducant, ut sentias quod sentiunt, etiamsi facere non possis quod faciunt. nemo enim uult esse phreneticus, etiamsi uideat phrenetici uires uiribus sanorum esse fortiores. Cf. Sen., Ep. 15.1: sine hoc aeger est animus. corpus quoque, etiam si magnas habet vires, non aliter quam furiosi aut phrenetici validum est. “Without this [sc. philosophy], the soul is sick. The body too, even if it has great strength, is strong no differently from the body of a madman or a phreneticus.” Clearly, Augustine did not invent this motif; what is striking, as we shall see, is the extent to which he drew upon and elaborated it.

81 This is a schematic and partial description of Pelagius’s views. For an in-depth account, see the discussion and texts collected in Rees 1998. See also Brown 2000 [1967], 340–53 for an account of the conflict between Pelagius and Augustine over the lives of aristocratic women in the years following the sack of Rome. Allen and Neil 2013, 115–18 discuss Pelagius and Pelagianism in relationship to religious and ethnic conflict in the early fifth century CE.
whereas most such polemic invoked “crazy” in the sense merely of difference or deviance in thought and behaviour (for example, through the noun *insania*), a more precise diagnosis lies behind Augustine’s use of the word *phreneticus*. The Pelagians who condemn marriage do not suffer from merely any kind of crazy, but from the kind associated by Macarius with vainglory, that is, inflammation of the brain.

The triangulation of asceticism, vainglory, and cerebral health is repeated in another letter that Juliana must have read in the years following her relocation to North Africa. In 414, the Roman theologian Jerome, a colleague and opponent of Augustine, wrote to Juliana’s teenage daughter Demetrias, who had renounced marriage in favour of dedication as a holy virgin.\(^\text{82}\)

Jerome is famous for, among other things, his mentoring relationships with aristocratic women, all of whom he urged to adopt austere ascetic practices, and at least one of whom was thought to have died under his instruction.\(^\text{83}\) It is surprising, then, that in his letter to Demetrias, Jerome helps himself to a pinch of moderation. In this passage, Jerome makes the argument that, while some people privilege solitary over communal ascetic practice, isolation can make the minds even of men—not to mention women—topple over into an illusion of self-sustenance and pride.\(^\text{84}\) Nor is this all:

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\(^{82}\) On Demetrias and the letters she received from famous theologians in these years, see Jacobs 2000; Kurdock 2007; Cain 2009, 160–66. For the date of Jerome’s letter, see Cain 2009, 160. On “holy women” in late antique texts, see Clark 1998.

\(^{83}\) See Cain 2009, 165, where Jerome is described a “grooming” Demetrias as an exemplar of “Hieronymian-style” female asceticism. See Cain 2009, 102–05 and Crislip 2013, 81–4 for Jerome’s relationship with other women and the death of Blesilla. Among the most important and illuminating works on Jerome’s relationships with aristocratic women is Miller 1993, which deals in particular with Jerome’s eroticisation of the virginal body.

\(^{84}\) Hier., Ep. 130.17: *quarum prior praefertur quidem secundae, sed, in uiris si quidem periculosa est, ne abstracti ab hominum frequentia sordidis et inipsis cogitationibus pateant et pleni adrogantiae ac supercillii cunctos despiciant arment que linguas suas uel clericis uel aliis monachis detrahendi <causa>—de quibus rectissime dicitur: filii hominum, dentes eorum arma*
I have seen the health of the brain damaged through excessive abstinence in certain individuals of both sexes, and especially in those who dwell in cells that are damp and cold, with the result that they do not know what they are doing or in which direction they turn, what they ought to say, what they ought to do.\textsuperscript{85}

Jerome does not suggest that isolated ascetic practitioners suffer from phrenitis—quite the reverse, their problems are caused by an excess of moisture and an absence of heat.\textsuperscript{86}

Nonetheless, his warning resonates with the strategies suggested by Augustine and Macarius for limiting ascetic practice through reference to the weakness of the brain.

\textit{Conclusion}

Sickness of the brain stood in parallel to vainglory as a consequence of excessive ascetic practice because, as I have argued, cerebral injury impaired one’s ability to achieve spiritual health. At the same time, brain health could be causally related to affective disorder. According to the fourth-century monastic writer Evagrius of Pontus, the brain was a particular site of vulnerability for the perfected monk. In his treatise \textit{On prayer}, Evagrius writes as follows:

\begin{quote}
Whenever, then, the mind prays purely, unerringly, and truly, at that time the demons no longer creep in from the left but from the right. For they suggest to it an appearance of sagittae et lingua eorum gladius acutus—quanto magis in feminis, quarum mutabilis fluctuans que sententia, si suo arbitrio relinquatuer, cito ad deteriora delabitur!
\end{quote}

\textsuperscript{85} Hier., \textit{Ep.} 130.17: \textit{noui ego in utroque sexu per nimiam abstinentiam cerebri sanitatem in quibusdam fuisset uexatam praecipueque in his, qui in humectis et in frigidis habituauere cellulis, ita ut nescirent, quid agerent quoue se uerterent, quid loqui, quid facere deberent.}

\textsuperscript{86} One might say, based on ancient medical assumptions about the bodily qualities of gender, that they have feminised their brain by making it cold and wet, whereas Augustine’s phrenetic ascetics have hyper-masculinised the same organ, by heating it up and drying it out. See, esp., King 2013 for a discussion of bodily qualities. Hipp., \textit{Aër.} 10.31–3 emphasises the wetness of the female brain. Cf. Gal., \textit{Hipp. Epid.} 6 (XVIIb 4.7–9 K.) for the argument that in eunuchs, women, and children the scalp is wet, but in bald (men) exceedingly dry. In antiquity, baldness was caused by sexual intercourse, which was thought to drain fluid from the man’s brain for the production of semen. The dryness of the male brain was thus both physiological (caused by the generation of semen) and behavioural (provoked by sexual activity). See, for example, Arist. \textit{GA} 5.3, 784a4–7 and [\textit{Prob.}] 897b23–9.
God in a form customary for the senses, so that it might suppose, finally, that it has achieved the goal of the prayer. And this, as a marvellous and learned man has said, comes about through the passion of vainglory, and also through the region of the brain being touched and a blood vessel palpated by the demon. I believe that the demon, kindling the aforementioned region, bends the light around the mind as it wishes, and thus provokes the passion of vainglory.\footnote{Evagr., Or. 72–3 (PG 79, 1181.42–1184.4): Ἐπάνω καθαρὸς λοιπὸν, ἀπλανὸς καὶ ἀληθῶς προσεύχηται ὁ νοῦς τῷ τηνικαθα, οὐκ ἔτι ἐκ τῶν ἀριστερών ὑπέρχονται οἱ δαίμονες, ἀλλ᾽ ἐκ τῶν δεξιῶν· ὑποτίθενται γὰρ αὐτὸ δόξαν Θεοῦ, καὶ σχηματισμὸν τινα τῷ τῇ αἰσθήσει φίλων, ὥς δοκεῖν τελείως τετεῦχθαι αὐτὸν τῷ περὶ προσευχῆς σκοποῦ. Τοῦτο δὲ, ἐφασε θαυμαστῶς καὶ γνωστικὸς ἀνήρ, ὑπὸ τοῦ τῆς κενοδοξίας πάθους γίνεσθαι, καὶ ὑπὸ τοῦ δαίμονος τοῦ ἀπομένου, τοῦ κατὰ τόν ἐγκέφαλον τόπου, καὶ φλεψίς πάλλοντος. Οἵμαι τὸν δαίμονα ἐφαστόμενον τῷ εἰρήμενον τόπου τῷ περὶ τὸν νοῦν φῶς τρέπειν καθὼς βουλεύται, καὶ οὕτω κινεῖσθαι τῷ τῆς κενοδοξίας πάθος.}

Vainglory is a distortion of one’s perceptual faculty, such that one seems to (but does not in fact) see a vision of God. One’s perceptual faculty is distorted by the physical intervention of a malicious demon: In order to distort one’s perceptual faculty, the demon must “touch” (ἁπτομένου) and “kindle” (ἔφαστόμενον) the brain, and palpate the blood vessel in that region.\footnote{On the corporeal nature of demons, see G. Smith 2008. Smith demonstrates that late ancient demons are made of \textit{pneuma}, that is, the same substance as the human soul. “Their constitutional affinity with the soul may have offered special access to a person’s thoughts or inclinations, allowing the instigation of psychological (which is to say quite physical) ‘movements’ in a person’s soul” (G. Smith 2008, 496).}

According to Evagrius, the affective disorder known as vainglory occurs through a physiological mechanism that is triggered by a demon working within the brain. The demon’s kindling of the brain and the bending of the light echo Macarius’s account of his own incendiary dream vision. The localisation of vainglory within the brain further corroborates the argument I have put forward in this section, that brain damage stood alongside, at times caused, and, indeed, sometimes represented vainglory, as a risk faced by those who sought ascetic perfection.

This is not surprising. As a passion linked to hallucinatory perceptions of God and of oneself, vainglory was most naturally located within the brain. Its association with phrenitis in
particular was perhaps provoked by the existing relationship between vainglory, vanity, and heat. The relationship was also suggested, however, by some of the characteristic symptoms of phrenitis, above all the preternatural strength experienced by the phrenetic patient. As Augustine wrote to Juliana, “no one wants to suffer from phrenitis, even if she should see that the energy of the phrenetic person is stronger than the energy of those who are healthy.” In the following section, we will explore what Augustine means by this remark. Indeed, it will prove central to the popularity of phrenitis as a diagnosis of those who seek salvation through their own virtue.

3. The Medicalisation of Religious Difference

The bishop Augustine of Hippo mentions phrenitis over forty times in extant letters, sermons, and polemical tracts as a diagnosis of religious opposition. While a good deal of attention has been paid to Augustine’s use of a medical framework for conceptualising sin, salvation, and his own pastoral role, there has been no sustained examination of phrenitis as a discrete and, above

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89 Anti-Manichaean polemic: Util. cred. 18.36. Anti-Jewish polemic: S. dom. m. 1.57; En. Ps. 35, 17.20–8; En. Ps. 58.1, 7.17–20 and 58.2, 5.67–71; En. Ps. 63, 3.17–24; En. Ps. 65, 4.66–8; En. Ps. 68.2, 5.41–5; En. Ps. 70.1, 14.72–3 and 20.20–5; En. Ps. 96, 2.27–9; En. Ps. 134, 22.25–8; Io. ep. tr. 8, 10–11 (PL 35, 2042.57–2043.11); Io. eu. tr. 7, 19.1–6 and 17, 15.27–9; S. 16A (PL 41, 223.218–19 and 224.253–57); S. 77, 4 (PL 38, 485.15–24); S. 80, 4 (PL 38, 496.6–17); S. 111, 2 (RB 57, 114.56–8); S. 175.3 (PL 38, 945.49–946.43); S. 284 (PL 38, 1292.17–30, and 1293.16–8); S. 386 (PL 39, 1697.12–5); S. 229E, 468.15–8 (MiAg 1); S. 313B, 74.9–10 (MiAg 1); S. 4D, 6 (Dolbeau 416.129–131); S. 25D, 18 (Dolbeau 260.353–63). Anti-Donatist polemic: C. Cresc. 4, 50.60; Ep 89.6; Ep. 93.1–2; Ep. 185.2; S. 47, 17 (PL 41, 586.436–38); S. 99 (PL 38, 599.16–20); S. 359 (PL 39, 1595.49–1596.16); En. Ps. 34.2, 13.23–34. Anti-Pelagian polemic: Nat. et gr. 7, 237.4–8; Ep. 157.2, (CSEL 44, 453.15–454.2); B. uid. 15.19, 325.23–326.4; Gr. et pecc. or. 2, 7.8; C. Iul. 4, 27 (PL 44, 751.30–752.29). Against badly behaved Christians: En. Ps. 39, 8; En. Ps. 98, 5.22–5. Against pagans: S. 87 (PL 38, 538.21–43); Io. eu. tr. 7, 2.1–8; S. 25D, 18 (Dolbeau 260.353–63). Other occurrences of phrenitis: Ep. 7.2; Quant. an. 22, 38 and 22, 40; Gn. litt. 12, 12–21; Cura mort. 12.14; Ciu. 19, 4.44–58. I have checked this list against that compiled in Gourevitch and Gourevitch 1998, 516–17. I do not include, as they do, instances where Augustine refers to symptoms of phrenitis (for example, fever) without naming the condition itself.
all, an embodied diagnosis in Augustine’s medicalisation of religious difference. This lack of attention is partially explained by the tendency of translators to render the Latin words for “phrenitis” (phrenitis, phrenesis, frenitis, frenesis) and “person suffering from phrenitis” (phreneticus) in generic terms, such as “insane,” “overwrought,” and “delirious.” By highlighting the technical term lost behind these non-specific categories, this final section demonstrates that what Augustine refers to is not, in fact, a general “crazy,” but rather a discrete medical condition with a set of symptoms that Augustine adapts from technical discourse to suit religious disorder (or difference) and its therapies. Through this focused examination, we can develop a deeper understanding of how Augustine uses medical discourse to articulate a vision of Christianity, not simply as a healing religion, but as a healing religion that sick people, as a consequence of their sickness, reject.

Phrenitis functions for Augustine as a model for sickness that masks itself from the patient, such that rejection of medical care becomes, like vainglory, symptomatic of a deeper disease of the soul. In this way, he is able to explain religious difference as “crazy” in not only the content but also the fact of its deviation from certain norms. The telos of Augustine’s diagnosis is the justification of therapeutic intervention without the patient’s consent. This therapeutic intervention, as it emerges in his texts, is characterised above all by physical

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90 Kolbet 2010 and Couenhoven 2013, for example, each deal with Augustine’s role as healer of souls, but do not discuss phrenitis in any depth. The single exception is Gourevitch and Gourevitch 1998, a brief but precise study providing an account of phrenitis as it appears in Augustine’s corpus. The authors emphasise that Augustine is most interested in the phreneticus (“phrenetic patient”) and the “sacred drama” between doctor and disease, using the noun form “phrenitis” on only a couple of occasions (Gourevitch and Gourevitch 1998, 505). They also emphasise Augustine’s knowledge of medical, especially Methodist, accounts of the disease, and suggest that Augustine was familiar with the works of Caelius Aurelianus (510). Despite drawing attention to the Christian symbolism that permeates Augustine’s account of phrenitis (511), however, Gourevitch and Gourevitch do not engage at all with the question of how phrenitis fits into Augustine’s theological and pastoral framework.
constraint. Through the model of phrenitis, Augustine establishes a basis for his own interventions into the religious and political freedoms of his opponents. This insight has implications for how we think about the role and function of medical discourse in late antique sermons.

i. The Experience of Strength in Disease

In accordance with the dominant medical doctrines of late antiquity, Augustine considered phrenitis to be a condition affecting the brain. More precisely, he explained phrenitis as a problem with the nerves that connect the brain to the sensory and motor organs. In the final book of his *Literal commentary on Genesis*, Augustine explains the hallucinations caused by phrenitis as the consequence of disturbance (*peturbatio*) of the passages (*iter*), that is, the nerves,\(^91\) that the attention (*intentio*) of the soul follows when it departs from the brain.\(^92\) Since the soul cannot, in

\(^{91}\) Gourevitch and Gourevitch 1998, 510–11 suggest that Augustine’s use in this text of *uia* (“path”) to describe physical connection between brain and sensory organs points to a Methodist understanding of the disease (that is, the blockage of *poroi* [Gk.]), rather than a Galenic concern with the nerves. Yet, Augustine’s discussion of the role of the brain in controlling sensory and motor action (*Gn. Litt.* 7, 13), and his description of ventricular localisation (*Gn. Litt.* 7, 17) earlier in the treatise suggest that he is working with a Galenic, rather than a Methodist model. In particular, it must be noted the words that he chooses to describe the “pathways” from the brain to the sensorimotor organs are always metaphorical (*fistulae; riuuli; uiae*), such that *uiae* does not necessarily represent a medical borrowing from Caelius Aurelianus, but another variation on Augustine’s geographically-oriented metaphorical presentation of human body and its cerebral governance. It should also be pointed out, however, that Augustine uses the term *nerui* when he is describing the heating and hardening effect of phrenitis upon the motor nerves, in such a way that we might understand it to mean “sinews” rather than “nerves” (albeit sinews that extend like puppet strings from the locus of the soul, i.e., the brain). See *quant. an.* 22, 38, which is partially discussed in n85, below. While this might suggest that Augustine does *not* have a concept of “nerves,” his discussion of the brain in *Gn. Litt.* 7, 17–19 makes it absolutely clear that the brain is responsible for both sensory and motor activity. Note that O’Daly 1987, 80–1 also understands Augustine’s references to *uiiae* and *iter* in *Gn. Litt.* 12 to refer to the sensory nervous system.

\(^{92}\) On medieval receptions of Augustine’s discussion of visions and hallucinations in this text, see especially the recent of Keskiahio 2015, 137–216. Keskiahio’s primary focus is upon the influence
these circumstances, make use of the sensory organs, and since it cannot cease from its own activity, it invents its own images, imprinting them upon the spirit that runs through the brain and nerves as agent of soul.\textsuperscript{93} While Augustine’s account avoids medical terms, his overall map aligns with the Galenic doctrine that \textit{pneuma} departs from the brain and into the sensory organs, in order to actualise the faculty of perception.

In an earlier, philosophical treatise, \textit{On the magnitude of the soul}, Augustine turns rather to the effects of phrenitis upon the \textit{nerui} (nerves or sinews) responsible for voluntary motion. Addressing the question of how bodily and spiritual strength might be related, he determines that bodily strength is no index of spiritual power. His evidence for this claim is phrenitis. It is clear, he writes, that people suffering from phrenitis can struggle and resist “with greater strength than in full health,” even though their body is wasted by the disease; this is because excessive heat “stretches and hardens their \textit{nerui}.\textsuperscript{94}

The superhuman strength of the person suffering from inflammation of the brain was not an Augustinian invention. In a text from the popular philosophical genre of questions and

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g\textsuperscript{\textsuperscript{93}} Aug, \textit{Gn. Litt.} 12, 20: \textit{sed sopito aut perturbato aut etiam intercluso itinere intentionis a cerebro, qua dirigitur sentiendi modus, anima ipsa, quae motu proprio cessare ab hoc opere non potest, quia per corpus non sinitur uel non plene sinitur corporalia sentire uel ad corporalia uim suae intentionis dirigere, spiritu corporalium similitudines agit aut intuetur objeactas.} According to Keskiaho 2015, 9, Augustine’s account is “essentially psychological,” insofar as it attributes dream visions to the soul. However, it is important to note the centrality of the brain and the passageways to Augustine’s model. Hallucinations and visions are creations of the soul as it is enabled and confined by its bodily instruments and environment. In a sense, his account is compatible with that of Nemesius of Emesa and Aëtius of Amida, who consider the front ventricles of the brain to be the organ of the \textit{phantastikon}, that is, the faculty of soul responsible for both imagination and perception.

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\textsuperscript{94} Aug., \textit{Quant. an.} 22, 38: \textit{at quosdam phreneticos, quibus uigiliae et uini uis et acutae febres, id est tot calida plus nimio neruos tendunt atque durant, maioribus uiribus quam integra ualetudine reluctari et multa facere manifestum est, cum eorum corpus sit aegritudine adienuatius et exilius.}
answers, an unknown author poses the question of “why those suffering from phrenitis are strong while they are subject to the affliction, but weak when it departs?” The answer is that a “dry imbalance” has taken hold of the brain and the nerves, which gives the nerves (νεῦρα) tension for activity. It is highly unlikely that Augustine read this text, not least because it is subject to doubt and speculation whether Augustine ever fully learned Greek, the language in which it was written. Nonetheless, the physiological mechanism that the author describes has travelled into Latin clearly enough for Augustine to invoke it not merely as an explanation of phrenitis, but also as a model for how the experience of strength might be caused by disease.

We have already seen this strength invoked in Augustine’s critique of Pelagian injunctions to celibacy: “No one wants to suffer from phrenitis,” he writes to Juliana, “even if she should see that the energy of the phrenetic person is stronger than the energy of those who are healthy.” This was to become a motif in Augustine’s writings, especially in polemic against Judaism. In a sermon on psalm 58, which was preached at Carthage at around the same time that he sent his letter to Juliana, Augustine denounced the strength of “people who base their self-assurance” on wealth, on a muscular body, on high rank, on political power, or—most dangerously of all—on the strength of their own righteousness. These individuals are akin to those who suffer from phrenitis. “But such strength, belonging to those who trust in their own justice,” he adds, “has prevented the Jews from entering through the eye of the needle. For, since

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96 Alex., [Prob.] 3.5 (Kapetanaki and Sharples 2006, 98–9, Suppl. prob. 1.5, trans. adapted): Διὰ τι οἱ φρενιτικοί ἐν μέν τῷ πάθει ἰσχυροὶ, ἀπαλλαγέντες δὲ ἀσθενεῖς; Ὡτι ξηρὰ δυσκρασία κατέχει τὸν ἐγκέφαλον καὶ τὰ νεῦρα, αὐτή δὲ τὸν δίδωσι τοῖς νεῦροις πρὸς ἐνέργειαν. We might also translate neura as “sinews,” since, like the Latin word nerui, it could carry both meanings.
98 See fn79, above.
they trust in themselves as righteous and seem to themselves to be healthy, they have refused medicine and even killed the physician.”

The preternatural strength of the individual whose body is affected by phrenitis provides a model for the reliance of the Jewish people on their commitment to the law as a guide for righteous living.

In an exposition of psalm 70, Augustine again devotes his attention to the necessity of grace for the salvation of the soul. The argument of this sermon is “that all our hope is to be in God, and we are to trust nothing to ourselves, as though in our own strength—otherwise, making our own what is from that one [sc. God], we might lose what we have received.”

The verb translated here as “to trust” (praesumamus) recurs in the opening and the ending of this sermon, each time in connection with medical care. Speaking again of the Jews, he reports the words of Paul: “Glorying as if in deeds, he [sc. Paul] said, they shut out grace from themselves, and they

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99 Aug., En. Ps. 58.1, 7.7–11: sed praesumentium de iustitia sua talis fortitudo impediuit Iudaeos ne per foramen acus intrarent. cum enim de se praesumunt quod iusti sint, et tamquam sani sibi uidentur, medicinam recusauerunt, et ipsum medicum necauerunt.

100 On the overlap in Augustine’s polemic against Pelagians and Jews, see Cary 2008, 23.

101 The role of “grace” in Augustine’s thought continues to inspire vast quantities of literature. The definition of “grace” that I use in this chapter derives from Karfiková 2012, 64: “Augustine calls this help [from God] “grace” (gratia), rendering by the word deliverance from the fear of punishment, forgiveness of sins on account of penitence, and righteousness bestowed on the grounds of the faith in mercy, not one’s acts” (emphasis mine). Within Augustine’s framework of phrenitis, Karfiková’s definition might be reworded as follows: “health bestowed through acquiescence to the doctor’s care, not through one’s own strength.” Note that the medical metaphor disrupts the justificatory aspect of grace: The point of grace is that one does not deserve it on account of one’s sin; what, then, does it mean that one does not deserve to be healed through the doctor’s care? Augustine tries to resolve this paradox through reference to the violence and resistance of patients suffering from phrenitis. The tensions that emerge here reflect the underlying contradictions of the “medical metaphor” in early Christian thought.

102 Aug., En. Ps. 70.1, 1.54–6: ut tota spes nostra in deo sit, nihilque de nobis tamquam de nostris uribus praesumamus, ne nostrum facientes quod ab illo est, et quod acceperimus amittamus.

103 It also occurs twice in the passage quoted from Augustine’s En. Ps. 58.1, 7.7–11, quoted above.
spit out the medicine, as if trusting (*praesumentes*) in their own false health.”

Augustine concludes his sermon with clarification of this medical frame, praying that he will not, like the Jewish people, rely on the law, rather than upon grace: “Let me not take glory in my own strength; let me not linger in texts; let me reject erudition, that is, the people who glory in texts, meanwhile trusting (*praesumentes*) perversely in their own strength, like those suffering from phrenitis (*phreneticos*).”

Augustine’s repetition of *praesumentes* frames his sermon and suggests the import of his diagnosis. The bodily strength characteristic of phrenitis not only masks a deeper bodily disorder, but also causes the sick person to rely upon their own strength. This has two consequences: Phrenetic patients act in ways dangerous to their own health; and phrenetic patients resist medical care, sometimes with (unusually powerful) violence.

Recall how, in his sermon on psalm 58, Augustine accused the Jews of killing their “physician”: This evokes not only the Christian narrative of Jesus’s death, but also the more widespread trope in ancient medical discourse that the physician must necessarily tolerate the unpleasant and sometimes dangerous task of caring for the sick (especially the mad).

In consequence, a central therapeutic strategy that Augustine highlights is to bind down the phrenetic patient in order to

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104 Aug., *En. Ps.* 70.1, 1.17–20: *gloriantes, inquit, tamquam de operibus, excludunt a se gratiam; et tamquam de sanitate sua falsa praesumentes respuant medicinam*. Cf. Aug., *Ep.* 157.7 (CSEL 44, 453.17), where the verb recurs in a similar context.

105 Aug., *En. Ps.* 70.1, 20.20–3: *non glorier ergo de uiribus meis; non in littera remaneam; reprobem litteraturam, id est homines de littera gloriantes, et de suis uiribus peruerse, tamquam phreneticos, praesumentes*.

106 See Cels., *Med.* 3, 18 on the violence of phrenetic patients. See also Elm 2012, 168, where we find that physicians of the soul face “extraordinary resistance” in their patients.

107 Amundsen 1982, 331: Fourth-century Christian authors “inherited and exploited to the fullest the positive metaphorical value of the idea of the physician as one who unselfishly succors the ill, enduring unpleasant tasks in caring for the unhealthy, often administering necessarily painful means for effecting a cure.”
prevent them from doing damage either to themselves or to others.\textsuperscript{108} The conclusion to Augustine’s sermon on psalm 70 (“trusting perversely in their own strength, like those suffering from phrenitis”) echoes not only his opening use of the word \textit{praesumere}, but also his description earlier in the sermon of how the Christian evangelist Stephen criticised the Sanhedrin (Acts 7:51): “He bound with words those who, suffering from phrenitis, were raving savagely.”\textsuperscript{109}

Following the paradigm of medical phrenitis, Augustine constructs a set of characteristic symptoms (preternatural strength; unfounded confidence in one’s own health; resistance to the physician) and a mode of treatment (bondage) for a theological or a spiritual disease—that of refusing Christian salvation.\textsuperscript{110} The invocation of phrenitis establishes a bind wherein declaration of one’s own health, indeed, the voicing of opposition to the Christian model, is a symptom of disease.

\textsuperscript{108} Cf. Cels., \textit{Med.} 3.18, 98.33: \textit{eos vero qui violentius se gerunt, vincire convenit; ne vel sibi vel alteri noceant}. This was a common theme in ancient medical texts.

\textsuperscript{109} Aug., \textit{En. Ps.} 70.1, 14.72–3: \textit{phreneticos male saeuientes uerbis ligabat}.

\textsuperscript{110} Cf. Aug., \textit{Beata v.} 2.243–50: \textit{atque illa liberrime, quod minus habebant, quasi de suo cellario promendum imperans: iam dic nobis, inquit, et redde, qui sint isti academici et quid sibi uelint. cui breuiter cum exposuissem aperte que ita, ut nemo illorum ignorus abscederet: isti homines, inquit, caducarii sunt—quo nomine uulgo apud nos uocantur, quos comitialis morbus subuertit - et simul surrexit, ut abiret}. In this passage, which brings chapter 2 of the dialogue to a close, Augustine’s mother Monnica pointedly asks her son to explain to her who the Academics are; this is, he notes, because she observes that others are ignorant of the identity of the Academics, and have only been pretending to understand the jokes which he and his friends have exchanged. When Augustine explains to his mother and to his guests (but not to us) who the Academics are, she calls them \textit{caducarii} (lit., “those who fall down”), which is here used to mean “epileptics,” a common medical model for Christian disorders of the soul (see Wright 2015, 356). Like the “Jews,” and the excessive ascetic practitioners, the Academics, who practice skepticism, are branded as proud, chiefly for their “restraint and detachment,” and their “avoidance of error.” I am grateful to Catherine Conybeare for pointing out this comparandum.
Augustine’s sermons on the psalms form a cornerstone in his anti-Jewish polemic. This is in large part because he is engaged in a typological project, reading the Jewish psalms as prophecies foreshadowing the coming of Christ. His goal is to undermine Jewish readings of the psalms, in order to appropriate them for the Christian context as supporting evidence both for the life of Jesus (through anticipatory signs that could be identified in the texts) and for the broader narrative of salvation that Jesus’s death set into motion. The model of phrenitis appears in ten of Augustine’s sermons on the psalms, where it functions to undermine Judaism as a form

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111 Augustine’s anti-Jewish polemic has a complex history. It was manifest and frequent, but also limited in a way that its reception was not. Fredriksen 2010 offers an important account, summarising Augustine’s polemical range as follows: “A glance at the subject index under Jew or Judaism in any volume of Augustine’s sermons reveals the familiar themes of adversus Iudaeos invective: Jews are blind, hard-hearted, fleshly, stubborn, and prideful; they murdered Christ; they are exiles; they carry the church’s books; they are saved only by conversions” (311). At the same time, she makes the point that Augustine’s attitude toward the Jews was, in comparison to his treatment of pagans and non-Catholic Christians, “uncharacteristically tolerant” (Fredriksen 1995, 299), and, furthermore, that his rhetoric illuminates not his day-to-day engagement with Jewish people, but rather “his construction and use of various kinds of ‘Jews’ in service to whatever teaching that, at a given moment, he wants to drive home” (Fredriksen 2010, 307). In particular, Fredriksen builds upon the arguments of Cohen 1998 that Augustine used the story of Cain and Abel, in which Cain is expelled as a murderer but nonetheless receives the protection of God, as an imperative for Christians to protect their Jewish brethren. Cf. Renna 2007, 137: “The Jews should continue to observe the Torah, according to Augustine, and should continue as a protected people. Christians should not hinder the Jews in their faithfulness to their ancestral customs.” The medical discourses I explore in this section resonate with the findings of Fredriksen and Cohen, insofar as Augustine polemicises against the Jews, but as sick people in need of cure, rather than as deserving of death. At the same time, Augustine’s diagnosis of the Jews with phrenitis complicates Renna’s rather pacific sketch. (Note that Renna’s text is about Jewish–Christian relations in the later medieval period, and Augustine is mentioned only in passing. I refer to this piece because it is suggestive of a popular scholarly understanding of Augustine’s treatment of the Jews.) Stroumsa 1996 offers a more nuanced account of anti-Jewish polemic in early Christian sources, its social context, and its transformation into antisemitism.

112 Rotelle 2000, 23–4 provides a basic introduction to Augustine’s interpretation of the psalms as prophecy of Christian salvation.
of madness characterised by reliance upon the old narratives of salvation (the law) instead of upon the new (that is, grace).\footnote{Cary 2008, 21–3 concisely discusses this issue in Augustine’s corpus.}

Twenty-four of Augustine’s references to phrenitis (that is, roughly half) are oriented polemically against the Jews. Throughout these texts, Augustine uses the trope of Christus medicus, or “Christ the physician,” to construct a narrative wherein Jews suffer from the same illusion of strength as those who strive for ascetic self-salvation.\footnote{“While the Bishop of Hippo was not the first Catholic preacher to transform pagan Aesculapian imagery into Christ the healer, Rudolph Arbesmann’s classic opens by maintaining that, ‘Augustine easily holds the first place among those patristic writers of the West who made use of the Christus medicus figure’” (Meconi 2014, 695). As Meconi suggests, the classic account of the medical metaphor in Augustine’s writings and more generally is Arbesmann 1954. Also affirmative of Augustine’s intense engagement with this metaphor is T. F. Martin 2001, 220: “Throughout his episcopal career in particular, Augustine never tired of recounting and elaborating upon the stunning healing skills of Christus Medicus.” See also ibid., 222fn9 for a collection of references to works dealing with Augustine’s use of a “healing paradigm.” Augustine’s development of the Christus medicus trope remained influential into the medieval and renaissance periods. See Henderson 2006, 113: “The overriding importance of the role of religion in the healing process is conceptualised in the idea of Christus Medicus and the relationship between the divine physician and the mortal physician, particularly as developed by St Augustine. Christ was portrayed as the divine physician who cured men’s spiritual diseases.”}
The Jews—in Augustine’s eyes—think that they are strong because they follow the law; in fact, they are fatally ill; in their delirium, the Jews resist the physician with violence. While many have commented that Augustine’s Jews are affected by frenzy, it has not been pointed out that, for Augustine, this mental disturbance is not a general but a discrete diagnosis—and one with which we are now familiar.\footnote{Gourevitch and Gourevitch 1998, while focusing on the medical and embodied aspects of phrenitis in Augustine’s corpus, do not mention the fact that most of his references to the disease enable anti-Jewish (or anti-Donatist, anti-Pelagian, etc.) polemic. Couenhoven 2013, 4 quotes, but does not comment upon, one example of this trope in Augustine’s sermons. He derives his reference for this example from Stephenson 2010, a conference paper to which I have not been} The Jews of Augustine’s text suffer from phrenitis, that is, from inflammation of the brain.
All but one of the twenty-four texts in which Augustine diagnoses the Jews with phrenitis are sermons. His account of Jewish resistance to medical care was a narrative that congregations throughout his episcopal territory were to hear repeated again and again. Through this narrative, Augustine taught his congregants—and the congregations who heard his sermons repeated by later medieval preachers—to think about the origin narrative of Christianity in terms of a conflict between Christ the doctor and his phrenetic patients, the Jews.

Sometimes Augustine elaborated further upon the treatment appropriate for the phrenetic patient. Those who reject Christ were not only to be tied down, but were also to be offered a *medicamentum*, that is, the blood of their own physician:

> You recognise the people suffering from phrenitis [that is, in the context of the sermon, the Jews who called for Christ’s death]; recognise the doctor also. “Father, forgive them, because they do not know what they are doing.” Those men were raving with their minds destroyed, and they poured out the blood of the doctor through their savagery. But he, meanwhile, was making drugs for the sick out of his very own blood.

The reinterpretation of Christ’s blood as the medicine for phrenitis twists the narrative back upon itself: The Jewish people refuse the physician, but the medicinal compound that will actually

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116 For the importance of late antique Christian preaching in shaping the imaginations and moral ideals of their communities, see Maxwell 2006, esp. 11–41 and 88–117, where the Christian preacher is compared to the pagan philosopher in their responsibility for educating non-literate and non-elite groups through public speech. On Augustine’s approach to preaching, and his cultural context, see Sanlon 2014.

effect healing is produced through this act of rejection. This is grounded not in the naturalistic medical tradition, but rather in theological symbolism. Nonetheless, Augustine’s repetition of this theme (in some six texts) renders the metaphor tangible, rather than abstract, in perhaps an unexpected way. The medicine for phrenitis is not only the persuasive speech of the preacher or the philosopher, but also the substance of Christ’s blood.118

The implications of this become clearer when we recognise that it was not only, according to Augustine, the Jewish people who suffered from phrenitis and who could benefit from this medicine. In a sermon on psalm 77, Augustine again describes the crucifixion in pharmacological terms:

The doctor understood that the persons suffering from phrenitis, killed the doctor because their minds were destroyed, not knowing that by killing the doctor, they were making a medicine for themselves. For we have all be cured by the death of the Lord, redeemed by his blood, and freed from hunger by the bread of his body.119

“We have all” been sick with phrenitis, Augustine tells his congregation. The defining moment of Jewish phrenitis—the resistance to medical treatment that ends in the doctor’s blood—paradoxically provides the remedy through which Augustine ensures the salvation of himself and his flock. This is how Augustine prepares his congregation for the Eucharist that is to follow: The wine served to members of the church becomes a medicine for the phrenitis of disbelief.120

118 As Ruddy 2004, 92 puts it, “Christ, as the antidote to human pride, serves the dual role of physician and medicine.” The notion that persuasive speech is a kind of medicament thrives throughout the Greco-Roman philosophical tradition. For its role in fourth-century preaching, see especially Kolbet 2010, Rylaarsdam 2014, and Mayer 2015b.
120 I am grateful to Melanie Webb for this suggestion. On the role of the Eucharist in constructing ecclesial membership and identity, see especially Harmless 1995, with a focus upon the catechumenate. Augustine’s reference to the medicinal blood of Christ as consumed by members of the church stands in contrast to the “symbolic” conception of the Eucharist that was
The Jews are not the only people to have suffered from phrenitis; yet it is the Christians who take their medicine and enjoy mental health. This has consequences for how Christians interact with their religious opponents. Above all, diagnosis of a mental disorder establishes a kind of epistemological authority that not only undermines an opponent’s theological position, but also justifies one’s own intervention into their spiritual care.

In the texts we have considered so far—and, indeed, in Augustine’s diagnosis of the Jewish people more generally—Augustine does not speak to any sanctions or therapeutic interventions that might be carried out upon the Jews. Their doctor is Christ, and their medical case history lies in the past. Their importance lies in the establishment of a Christian mythology, wherein the Jewish people represent the mentally ill patient whom the Christian strives not to become. In the next sub-section, we turn to contexts in which Augustine the preacher and bishop acts as physician to religious opponents of a more local and immediate context—that is, pagans, Pelagians, and Donatist Christians.

ii. Therapy for the Sick

In one very long sermon delivered in the small town of Boseth, close to Carthage, Augustine addresses the non-Christians in his audience directly: “If you still mock,” he declares, “you are phrenetic. ... Phrenetic people often knock down even their doctors, and yet they, being sympathetic of heart, not only do not get angry with those who knock them down, but even seek

 assigned to Augustine in the Middle Ages, and affirms contemporary arguments that distinction between symbolic (Augustine) and realist or conversionist (Ambrose) has been overdrawn (see the lucid account of Crockett 1989, 88–98). Penniman 2015 offers an account from a different perspective on the Eucharistic cup as a medicament.
their health.” The doctors here, while they are modelled on Christ the physician, do not represent Christ alone. Rather, they stand in for the body of Christ, that is, the members of the church, and above all the bishops and priests. Christians, Augustine asserts, do not get angry when they are mocked, and actually seek the salvation of those who mock them.

This is, perhaps, yet another rendition of the aphorism “turn the other cheek.” Yet, it carries here the additional edge that the one who turns the other cheek is not a peer but a doctor, carrying the authority of diagnosis. A similar epistemological hierarchy is constructed in Augustine’s treatment of Donatist Christians. Donatism was a rival North African Christian group, characterised by the demand that none tainted by capitulation during the persecutions should be accepted into, much less appointed as bishop within, the church. By the early fifth century CE, all those who had yielded to imperial demands were dead, but those whom they had appointed as their successors were discredited, in Donatist eyes, by association. In the meantime, Donatist Christians had elected their own clergy, who presided alongside “Catholic” (or


122 Lancel 2002, 275–304 provides an account strongly sympathetic to Augustine of the conflict between Donatists and Catholics in the late fourth and early fifth centuries. Brown 2000 [1967], 209, is brief but illuminating, and far more balanced in its consideration of both Catholic and Donatist parties: “Briefly, the Donatists thought of themselves as a group which existed to preserve and protect an alternative to the society around them. They felt their identity to be constantly threatened: first by persecution, later, by compromise. Innocence, ritual purity, meritorious suffering, predominate in their image of themselves. They were unique, ‘pure’: ‘the Church of the righteous who are persecuted and do not persecute’.” O’Donnell 2005 offers a similarly impartial overview of the development of Donatism (210–15) and the Donatist/Catholic conflict (215–43). Allen and Neil 2013, 118–21 present the evidence for Donatism based on Augustine’s epistolary evidence, contextualised within a broader frame of religious crisis and conflict in late antiquity. For extensive discussions of the violent confrontations between “Donatists” and “Catholics” in fourth- and fifth-century North Africa, see also Gaddis 2005, 103–30 and 131–50; B. Shaw 2011.
“Caecilianist”) bishops and priests in towns across North Africa. In this new world, “Catholicism” meant collaboration with the imperial government, while “Donatism” signified continued resistance. When Augustine became preacher, the Donatists were strong; during his episcopate, and in part through his own efforts, the Donatists were slowly crushed by imperial legislation.

Like excessive ascetic practitioners and like the Jews, Donatists were condemned by Augustine as purists who assumed a position of self-righteousness in order to deny the righteousness of others. This self-righteousness was identified by Augustine as a symptom of

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123 On the use of “Caecilianist” to describe the position that became known as “Catholic,” see O’Donnell 2005, 210.

124 This distinction was presented influentially but also controversially in Frend 1952, which argued that Donatism represented local (read “less Romanised”) North African resistance to imperial (Romanised, i.e., Catholic) authority. (O’Donell 2005, 211 provides a crisp critique of Frend’s position: “[Frend] still thought of catholicism as the norm and Donatism as the divergence.”). Brown 1968 challenged Frend’s notion that the strength of Donatism in the mid-fourth century reflected the rise of local North African identity. B. Shaw 1992 offers a nuanced revision of this influential argument, suggesting that Donatists were not so much a resistance group as the local orthodoxy, prior to the introduction of state intervention and the imposition of state-sanctioned Christianity in the late fourth and early fifth centuries. Maureen Tilley stood at the forefront of revisionist Donatist history, arguing in particular that the Donatist movement must be investigated not only through the writings of their opponent Augustine, but also through the meager but extant remains of their own texts: Tilley 1996; Tilley 1997; Tilley 2006. See also O’Donnell 2005, 209 for the difficulty that late antique scholars have in evading the powerful rhetoric of Catholic orthodoxy that emanates from Augustine’s texts: “As we recognise the polyphony of early Christian voices, even the best late-antique scholarship remarkably often accepts the notion of a single unitary ‘catholicism’ in late antiquity, surrounded by heresies. But that catholicism is something that was invented and propagated, and Augustine’s own history is a part of that process.”

125 Brown 2000 [1967], 207–39, esp. 210 (“Until the time of Augustine, the tide of feeling in this debate had flowed consistently towards the Donatist attitude.”) and 222 (“From 393 onwards, Augustine and his colleagues took the offensive against the Donatist church.”); see also B. Shaw 1992, 13. See Brown 1964, 108–09, with references, for the traditional (and, according to Brown, inaccurate) view that Augustine was “converted” to the utilisation of repressive legal measures against the Donatists only after the “Edict of Unity” in February 405.

126 See, for example, S. 47, 6–8 (PL 41, 575.123–578.214), in which Augustine suggests that Donatist bishops seek to distinguish the “sheep” from the “goats,” rather than leave this
phrenitis, a symptom that in turn evoked a cluster of other symptoms, including resistance to therapeutic care imposed by their physician. In a sermon on psalm 34, for example, Augustine argues that suffering alone does not a martyr make. If this were the case, he suggests, the mines would be filled with saints. Rather, what feels to some like persecution might in fact be justifiable punishment (in the case of the criminal), commendable correction (in the case of the son), or therapeutic intervention (in the case of the one who is sick). Thus, he declares:

Isn’t the doctor, being summoned for healing, frequently armed with a knife? This is against the wound, however, and not against the human being. He cuts that he might heal. And yet, when he cuts the sick man, the latter is in pain; he shouts out; he resists; and, if he happens to have lost his mind through fever, he even strikes the doctor. But the doctor does not desist from healing the sick man; he does what he knows how to do, and he does not care that the other curses and denounces him. ... The lethargic are roused up, and the phrenetic are tied down; yet, both of them are treated with love.

judgement to God. Cf. Brown 2000 [1967], 215: “The basic Donatist idea was of a Chosen People, that had preserved its identity without compromise with the ‘impure’ world.” Gaddis 2005, 105: “The Donatists sought to separate themselves, a pure and zealous minority, from a corrupt world and especially from the corruption of imperial power.”

127 Cf. Lancel 2002, 288: “In any case, added Augustine, ‘it was not the penalty that made the martyr, it was the cause’. Lancel refers to C. Cresc. 3, 51, noting parallel sentiments in Ep. 89.2 and Ep. 108.5.

128 Aug., En. Ps. 34.2, 13.10–3: itaque martyres non facit poena, sed causa. nam si poena martyres faceret, omnia metalla martyrribus plena essent, omnes catenae martyres traherent, omnes qui gladio feriuntur coronarentur. See Gaddis 2005, 131–50 for Augustine’s rhetoric of “disciplinary violence” against Donatist Christians. It is striking that the punishment for an actor or procurator who allowed for a meeting of “heretics” on an estate without the owner’s knowledge was to be bound with iron (cohercitus plumbo) and sentenced to work in the mines (perpeti metallorum operi deputetur). See the edict of Honorius and Theodosius on February 22nd 407 at Cod. Theod. 16.5.40, edited by Koptev (Accessed on March 9th 2016: http://droitromain.upmf-grenoble.fr/ Constitutiones/CTh16.html#5,).

129 Aug., En. Ps. 34.2, 13: medicus nempe qui ad salutem adhibetur, nonne ferro plerumque armatur? sed contra uulnus, non contra hominem. secat, ut sanet; et tamen cum secat aegrotum, dolet ille, clamat, resistit, et si forte febre mentem perdiderit, etiam medicum caedit; nec tamen ille desistit a salute aegrotantis, quod nouit facit, illum maledicentem, conuiciantem non curat.... lethargici excitantur, phrenetici ligantur; sed tamen utrique amantur.
Medical intervention is a classic philosophical example of pain that is in fact a good, rather than an evil. One endures the insertion of a drill into one’s mouth only if one anticipates the removal or avoidance of pain in one’s teeth. One allows a knife to cut away parts of one’s body in the belief that the knife is a medical instrument in the hands of a doctor, who is acting to ward off death and disease. The appropriation of this everyday example for philosophical discussions of virtue and vice lends to medical therapy, and its endurance, a virtuous aspect. It is, by implication, morally valuable to endure short-term pain for the sake of long-term health. Yet, as Augustine also suggests, medical treatment is not always a choice. Psychiatric care, in particular, is enforced regardless of the patient’s consent.

Historians of early Christianity have emphasised the similar responsibilities pertaining to preacher and philosopher. In part, these responsibilities involve the moral education of communities through rhetoric. “The long-standing tradition of philosophers who attempted to

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130 Pl., Protag. 354a3–7: Ὡ ἄνθρωποι οἱ λέγοντες αὖ ἡγαθὰ ἠνιαρὰ εἶναι, ἢρα οὐ τὰ τοιάδε λέγετε, οἷον τὰ τε γυμνάσια καὶ τὰς στρατείας καὶ τὰς ὑπὸ τῶν ιατρῶν θεραπείας τὰς διὰ καύσεων τε καὶ τομῶν καὶ φαρμακείων καὶ λυμοκτονίων γιγαντιάς, ὃτι ταῦτα ἡγαθὰ μὲν ἔστιν, ἠνιαρὰ δὲ; “You who say that some painful things are good, do you not say that such things as athletics and military training and treatments by doctors such as cautery, surgery, medicines, and starvation diet are good things even though painful?” Trans. Lombardo and Bell (Cooper and Hutchinson 1997). Compare Pl., Gorg. 479a6–b1, where Socrates discusses those who avoid seeing a physician when they are sick, out of fear of anticipated pain.

131 Gomory, Cohen, and Kirk 2013, 120fn1: “Only pediatricians and psychiatrists treat persons who do not seek their services.” Cf. Aug., En. Ps. 35, 17.20–5): medicus enim erat, et phreneticum curare uenerat. quomodo medicus non curat quidquid audiat a phrenetico, sed quomodo conualescat et fiat sanus phreneticus, nec si et pugnum ab illo accipiat curat, ille illi facit noua uulnera, ille ueterem febrem sanat, sic et dominus ad aegrotum uenit, ad phreneticum uenit. “For he was a doctor, and he had come to cure a phrenetic patient. Just as a doctor does not care about whatever he hears from the phrenetic patient, but rather about how the phrenetic patient might grow healthy and become well—indeed, does not care even if he receives blows from that man—the one giving the other fresh wounds; the other heals the old fever, so also the Lord came to the sick man, came to the phrenetic.”

132 Maxwell 2006, 12: “In Late Antiquity, Christian preachers attempted to shape entire communities according to moral ideals traditionally associated with philosophers and their
teach morality to the public,” writes Jaclyn Maxwell, “helps us to make sense of the Christian preacher’s role in late antique society.” In part also, the preacher and philosopher share a medical framework for attending to the psychic health of the individual. There is a continuity, as historians such as Wendy Mayer have pointed out, between philosophical and Christian therapeutics. Psychological affections—“passions”—migrate from the therapeutic texts of Seneca and Galen to the sermons and letters of bishops such as John Chrysostom and Augustine. Anger and grief, for example, are accompanied by physiological events, but are at root behavioural and affective orientations that the individual can, through intentional redirection and recommended modes of self-care, transform. Therapy, in the psychic therapeutics of philosophy and Christianity, is grounded in a practice of pedagogy and an assumption of choice. No individual can moderate their emotions and desires without the intention to do so.

circles.” See ibid., 12–41 for a detailed discussion of the relationship between preacher and philosopher.

133 Maxwell 2006, 41.
134 Brown 2000 [1967], 365: “To him [sc. Augustine], a bishop’s duties were not only ‘pastoral’; they had also become ‘medicinal’.” See also Elm 2012, 166–71, with reference to Gregory of Nazianzen, who understood the philosopher to be a “physician of the soul.”
135 Mayer 2015a; Mayer 2015b. On philosophical therapeutics, see chapter three, fn4.
136 Sorabji 2000 explores the Christian reception and transformation of Stoic psychology, in particular the role of the “passions.” For “passions” and “affections” more generally in Greco-Roman philosophy, see also Brunschwig and Nussbaum 1993; Braund and Gill 1997.
137 See, for example, John Chrysostom’s letter To Stageirios, being harassed by a demon, in which Chrysostom urges Stageirios to unlearn his despondency, through reorientation of the doxae (opinions, judgements) that motivate him. On anger, see especially Gal., aff. I 4 (V 16.4–21.4 K.), where learned restraint from anger is described as a form of askēsis (V 21.5 K.). For the psychophysiological aspect of affects, see Arist., DA 1.1, 403a25–b3 (Ross 1967).
138 Although note Elm 2012, 168, where it is observed that, according to Gregory of Nazianzen, “only a trained physician ought to attempt to cure himself.”
139 Thus, Augustine famously writes in Conf. 8, 7.21–2: da mihi castitatem et continentiam, sed noli modo. “Grant me chastity and continence, but not yet!” He theorises this vacillation in greater detail some paragraphs later as the division of the will, such that “[The mind] orders, I
The differences between anger and phrenitis as models for Christian healing are, at least on the surface, fairly clear: Philosophical therapy relies upon self-diagnosis and treatment, under the guidance of a teacher; physicians dealing with phrenitis, on the other hand, operate on the assumption that treatment should be enforced regardless of the patient’s understanding, participation, or desire.\textsuperscript{140} Phrenitis provides a model for therapeutic intervention in a context where the patient refuses treatment.\textsuperscript{141} As Lancel writes: “It was not the Donatists’ happiness that Augustine desired, ... but their salvation.”\textsuperscript{142}

This is clarified in a letter of approximately 417, which Augustine sends to the Roman official Boniface, in an effort to enforce the oppression of Donatist leaders.\textsuperscript{143} Boniface is new to his position, and asks Augustine to clarify the situation.\textsuperscript{144} Augustine explains the relationship between Catholic and Donatist Christians through the analogy of phrenitis:

\begin{quote}
\textit{said, what it should will: it would not command if it did not will; and it does not do what it commands. It does not, in fact, wholly will: it does not, therefore, wholly command.” Aug., Conf. 8.9.9–11: imperat, inquam, ut uelit, qui non imperaret, nisi uellet, et non facit quod imperat. sed non ex toto uult: non ergo ex toto imperat. Strikingly, Augustine describes his behaviour in this moment of vacillation as akin to that of a person suffering from an illness that impedes voluntary movement of the limbs, such as paralysis (Conf. 8.8.15–7, 30–33). I am grateful to Catherine Conybeare for bringing this passage to my attention.}
\end{quote}

\textsuperscript{140} Nussbaum 1993, 317: “The patient [in philosophical therapeutics] must not simply remain a patient, dependent and receptive; she must become her own doctor.”

\textsuperscript{141} In this sense, phrenitis differs from the other metaphors of sickness and healing which pervade the textual remains of the “Donatist” conflict (Gaddis 2005, 128–29, focusing upon blindness); although see also Gaddis 2005, 138, where the punishment of pagans and Donatists alike is compared to surgery for gangrene, a medical procedure which requires the surgeon to “turn a deaf ear to many cries” (citing Aug., Ep. 104.2.7, NPNF translation).

\textsuperscript{142} Lancel 2002, 303.


\textsuperscript{144} Of this letter, Lancel 2002, 302–03 writes as follows: “Augustine felt no need to elaborate a theory of coercion in religious matters, but he wanted at least to clarify his ideas on its legitimacy.” On Augustine’s ambivalent justification of religious coercion, and the history of its
For the doctor annoys the raving patient who suffers from phrenitis, and the father his undisciplined son—the first by tying him down, the second by beating him, but both by loving care. Indeed, if they neglect them and allow them to be destroyed, this false gentleness is in fact cruel. For if the horse and the mule, who have no intellect [Ps. 32:9], resist with biting and kicking the human beings by whom their injuries are to be treated and healed, the human beings, even though they are often in danger and are sometimes injured by teeth and hooves, do not abandon them until they have returned them to health through medicinal pains and torments. How much less is the human being to be abandoned by the human being, the brother by the brother. Otherwise, he might perish for eternity, who, being corrected, would be able to understand what a great kindness was offered to him, when he was complaining that he suffered persecution.\(^\text{145}\)

Augustine situates himself as a doctor responsible for healing the Donatists from the self-righteousness he identifies in their doctrine. The chasm of self-knowledge that diagnosis opens up widens such that the individual loses responsibility not only for their actions, but also for their capacity to know whether they are healthy, and what will make them well. The conflict between Catholic and Donatist Christians is transformed into a combination of (1) therapeutic violence which is perpetrated by the physician upon the patient, and (2) the irrational violence of the patient who resists medical care. Through this medical lens, what feels to the Donatists like “persecution” is reimagined as necessary therapeutic intervention.\(^\text{146}\)

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\(^{145}\) Aug., Ep. 185.2: molestus est enim et medicus fiorenti phrenetico et pater indisciplinato filio, ille ligando ille caedendo, sed ambo diligendo. si autem illos neglegant et perire permittant, ista potius falsa mansuetudo crudelis est. si enim equus et mulus, quibus non est intellectus, morsibus et calcibus resistunt hominibus, a quibus eorum curanda ulherna contractantur, et, cum inter dentes eorum et ungulas saepe homines periclitentur et aliquando uexentur, non tamen eos deserunt, donec per dolores et molestias medicinales reuocent ad salutem, quanto magis homo ab homine et frater a fratre, ne in aeternum pereat, non est deserendus, qui correctus intellegere potest, quantum sibi praestabatur beneficium, quando se persecutionem perpeti querebatur.

\(^{146}\) Lancel 2002, 303: “It was, as we would say nowadays to signify the intolerable, wanting to make someone happy in spite of himself; and that is what the Donatists said, too, declaring that one should not be forced into good.” Gaddis 2005, 137 highlights the “therapeutic” aspect of the punishments that Augustine requested from imperial authorities: “Donatist violence was to be answered not with violent persecution but with a steady coercive pressure that used fines, legal disabilities, and confiscations to bring recusants into the Catholic church. It was not retributive...
The semantic partnership of “persecution” and “therapeutic intervention” crops up elsewhere in Augustine’s account of the conflict between Catholic and Donatist Christians. Early in the fifth century, a series of councils at Carthage and delegations to the imperial court provoked multiple edicts condemning Donatism and prescribing punishment for its leaders and adherents. Most notorious is the “Edict of Unity” dated February 12th, 405, a document intended “purely and simply to proscribe Donatism.” Strikingly, the text of this edict evokes, albeit somewhat loosely, the discourse of “crazy” that we find in Augustine: “No one is to recall the Manichaean to mind, no one the Donatist, who, as we have discovered, do not desist from raving madness [furere].”

Either that same year or in the year following, Augustine reinforced this diagnosis in one of his most important anti-Donatist works, Against Cresconius the grammarian of the Donatist party. In this work, Augustine is responding to a letter that Cresconius had sent to him sometime around 401–02, defending the Donatist leader Petilianus. Nonetheless, the recent

punishment but rather disciplinary correction, a paradigm that justified coercive force out of the necessity to ‘save’ the Donatists from the consequences of their own error.”


148 Cod. Theod. 16.5.38 (Koptev, see fn128, above): Nemo manichaeum, nemo donatistam, qui praecipue, ut comperimus, furere non desistunt, in memoriam revocet.

149 Ebbeler 2012, 154 notes that, following this edict, “Augustine largely abandoned his efforts to initiate corrective correspondences with Donatist Christians and resorted to other tactics to force unification.” Brown 2000 [1967], 231 situates Augustine’s treatise against Cresconius amid a host of other works defending the Edict of Unity: “the new policy had to be defended, aggressively, against a coherent and easily-understood battery of criticism, manned with equal zeal by leading Donatist bishops and by simply schoolmasters [sc. Cresconius]: that it was unheard-of for a Christian to advocate a policy of persecution; that Augustine had gone back on his word. Augustine, in replying to his persistent critics, wrote the only full justification, in the history of the Early Church, of the right of the state to suppress non-Catholics.”

150 On the date of Cresconius’s letter, see Willis 2005, 54. Hombert 2000, 353 dates Augustine’s treatise to 405–06 or 406–07.
imperial measures cannot but have been forefront in Augustine’s mind as he addressed his opponent’s argument that the true Christian does not engage in persecution.\textsuperscript{151} Catholic treatment of Donatist Christians does not, Augustine asserts, amount to persecution. As in his sermon on psalm 34, the significance of pain inflicted depends upon the goal: “Accordingly, since the\textit{freneticus} troubles the doctor and the doctor binds the\textit{freneticus}, either both persecute both in turn, or, if persecution is only that which is done wickedly, the doctor does not persecute the\textit{freneticus}, but the\textit{freneticus} persecutes the physician.”\textsuperscript{152} In this polemical work, phrenitis allows Augustine not only to reimagine Catholic treatment of Donatists as a “kindness” rather than as “persecution,” but also to transform Donatist resistance itself into a form of persecution, that is, persecution of Catholics.

This is surprising, given that perhaps the most significant characteristic of phrenitis, for Augustine as for Nemesius and other authors of this period, is lack of self-governance and compromised intentionality. Indeed, phrenitis was a touchstone example of pardonable violence, on the grounds that the individual did not know what they were doing.\textsuperscript{153} In a sermon titled \textit{On the Lord’s Sermon on the Mount}, Augustine explains the command to “turn the other cheek” with regard to the behaviour of infants and\textit{frenetici}.\textsuperscript{154} John Chrysostom writes similarly that “people who are sick with phrenitis say many evil things to those standing around them, but their

\begin{itemize}
\item\textsuperscript{151} Indeed, he mentions the “Edict of Unity” at Aug., \textit{C. Cresc.} 3, 43.47, 44.48, 47.51.
\item\textsuperscript{152} Aug., \textit{C. Cresc.} 4, 51.61: proinde cum freneticus medicum uexat et medicus freneticum ligat, aut ambo inuicem persequuntur aut, si persecutio nisi quae male fit non est, non utique persequitur medicus freneticum, sed freneticus medicum.
\item\textsuperscript{153} As evoked also by Gourevitch and Gourevitch 1998, 511: “La comparaison des malades avec les\textit{nescientes quid faciunt} permet celle du médecin avec son confrère divin\textit{pordes in cruce.”}
\item\textsuperscript{154} Aug., \textit{S. dom. m.} 1, 57: quod ad misericordiam pertinere hi maxime sentiunt, qui eis quos multum diligunt tamquam filiis uel quibuslibet dilectissimis suis aegrotantibus serviunt uel paruulis uel freneticiis, a quibus multa saepe patiuntur et, si eorum salus id exigat, praebent se etiam ut plura patiantur, donec uel aetatis uel morbi infirmitas transeat.
\end{itemize}
listeners do not think that they are being insulted.”\textsuperscript{155} As Jerome had written of those solitary ascetics who injure their brains, “they do not know what they are doing or in which direction they turn, what they ought to say, what they ought to do.”\textsuperscript{156}

Augustine interprets the violence of the \textit{freneticus} as persecution because he wishes to highlight not only Donatist resistance to the Catholic imperative to convert, but also the acts of violence carried out by Donatist clergy and Circumcellions.\textsuperscript{157} The Circumcellions were an anti-imperial group affiliated with the Donatists.\textsuperscript{158} They were made notorious through Catholic polemic for encouraging martyr-suicides and acts of violence against Catholic Christians.\textsuperscript{159} Augustine continues in his treatise against Cresconius as follows: “Therefore, your savagery and most violent audacity, which is made known through your Circumcellions, who are attendants to

\textsuperscript{155} Joh. Chrys., \textit{Ad Stag.} 2 (PG 47, 451.17–9): \textit{Πολλὰ καὶ οἱ τὴν φρενίτιν νοσοῦντες λέγουσι τοὺς παρόντας κακὰ, ἀλλ’ οἱ ἀκοῦοντες οὐχ ἠγοῦνται ὑβρίζεσθαι.}

\textsuperscript{156} See fn84, above.


\textsuperscript{158} Gaddis 2005, 125–30 on the violence of the Circumcellions as a response to imperial repression.

\textsuperscript{159} Lancel 2002, 301–02 refers to the Circumcellion and the Donatists as “fanatics” and “outlaws,” engaged in “terrorism.” In contrast, O’Donnell 2005, 221 emphasises mutual participation in violence and the difficulty of getting a clear view on the Circumcellions, as presented solely through the eyes of their enemies: “It is tempting to try to equate them [sc. Circumcellions] to modern terrorists, but in fact their behavior is not unlike that of the stereotypically British football fan of our own day, and they may well have been as socially diverse (despite some common tendencies) as contemporary hooligans. No one in antiquity speaks up for them, and we see them only through the eyes of their enemies, chiefly Augustine, who credits them with organisational loyalty that may overstate the case. ... But there was plenty of violence to go around, and not all of it from Donatists against Caecilianists.” Cf. Brown 2000 [1967], 225: “Both churches, by that time, had a record of violence. ... Compared with the mounting pressure of the Catholic persecutions, the violence of the Circumcellions would always seem erratic and aimless; and in Hippo at any rate, such violence reached a climax only as an answer to the use of force by the Catholics.”
your clerics, had to be suppressed by all the laws that have been carried against you, and had somehow to be tied down.”

A similar theme is emphasised in a sermon that Augustine delivered at Hippo Diarrhytus (Bizerte), an old port town between Hippo Regius and Carthage, several months after imperial measures had been laid down against the Donatists at the Council of Carthage in 411. The entire sermon is framed around the theme of brotherhood and reconciliation, and begins, appropriately enough, with the conflict between Cain and Abel. Donatists and Catholics, Augustine explains, should be reconciled like brothers. The relationship was, of course, as egalitarian in the eyes of Augustine as that between the sons of Adam. The truth was that it was not (according to Augustine) Donatists and Catholics that needed to be reconciled, but the Donatists that had to be brought into agreement with Catholic norms. Augustine frames this disparity in medical terms:

Troublesome are those who suffer from phrenitis, who have lost their minds, and who wander hither and thither, sick, raving, and armed with weapons, searching for who they might kill, who they might blind—for it was recently announced to us that they have cut out the tongue of one of our priests. Those wicked men suffer from phrenitis. Loving care must be practised, and they are to be loved.

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160 Aug., C. Cresc. 3, 51.61: saeuitia igitur uestra et uiolentissima audacia per circumcelliones uestros clericorum uestrorum satellites omnibus nota conprimenda fuit legibus, quae contra uos latae sunt, et quodammodo conliganda.

161 Hippo Diarrhytus was the site of particular conflict. See O’Donnell 2005, 221: “Florentius, the fire-breathing bishop of Hippo Diarrhytus (modern Bizerte, east of Augustine’s Hippo) kept his opponent, the Donatist bishop, imprisoned for many years and tried to have him executed.” My source for the date and the location of the sermon is the opening note in Hill’s translation (Hill 1995, 207fn1); see also Hombert 2000, 167fn337.

162 Aug., S. 359.7 (PL 39, 1596.38–43): phrenetici molesti sunt, qui mentem perdiderunt, et insani atque furiosi armati vagantur hac atque illac, quaerentes quos occidant, quos excaecent. noua enim nobis nuntiata sunt, cuidam presbytero nostro linguam exsecuerunt. isti phrenetici sunt. exercenda est caritas, amandi et ipsi.
The violence that Augustine identifies as characteristic of the Donatists is not aimed at the physician, but at the family members attendant upon the sick. Phrenetici attack not only their physician, but also their fellow Christians. They are to be treated forcibly (albeit with loving care), both for their own sakes, and for the protection of their religious brethren.

Phrenetic patients are endangered not only by their fevers, but also through their own irrational behaviour. In a letter written to Vincentius, bishop of Cartenna, in 407 or 408, Augustine argues for the imperial measures that Vincentius disputes:163

For if anyone were to see his own enemy, made phrenetic with dangerous fevers, run headlong,164 surely in that case it would be to return evil for evils to permit him to go on

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163 Vincentius had been appointed as heir to Rogatus, leader of the “Rogatists.” The Rogatists had split off from the Donatists, apparently in dispute over resistance to imperial authority, but remained distinct from Augustine’s Catholic party. See Brown 2000 [1967], 239; Lancel 2002, 169; O’Donnell 2005, 46. For the date of this letter, see Hombert 2000, 286–87.

164 Teske renders currere ... in praeceps as “run toward a cliff” (Rotelle 2001, 278). This is, in fact, the standard English meaning given to praeceps (“headlong”) and praecipitare (“to throw/cast headlong”) in Augustine’s many denunciations of the martyr-suicides performed by Donatist protesters. See Gaddis 2005, 111–19 for the motif of “cliff-jumping” in Augustine’s denunciation of Donatist suicide-martyrs. Cf. Aug., S. 313E (MiAg 1, 537.1–5): “The heretics, though, and the Donatists, who falsely boast that Cyprian belongs to them, should pay attention to the way he exercised his office of bishop, and then they wouldn’t break away; to the way he went to his martyrdom, and then they wouldn’t throw themselves over cliffs (non se praecipitarent). The heretic breaking away in heresy, the Donatist jumping deliberately to his death (in morte praecipitatus), is certainly not one of Christ’s disciples; certainly not one of Cyprian’s comrades” (trans. Hill 1994, 110). This interpretation is extrapolated from Augustine’s comparison between the precipitate action of the Donatists and Satan’s challenge to Jesus to jump off “the pinnacle of the temple” (Matt. 4:5, trans. NRSV), as indicated by S. 313E (MiAg 1, 538.18–23), where the devil instructs both Jesus and the Donatists to “hurl yourself down (praecipita te).” (NB. The Latin Vulgate renders this phrase as mitte te deorsum [Matt. 4:5], but Augustine used earlier Latin translations, from which it is likely that he adopted the verb praecipiare.) Presumably on this account, Hill translates the verb praecipiare as “to jump off cliffs” and the participle praecipitatus as “cliff-jumper” throughout his rendering of S. 313E (see especially MiAg 1, 539.25–34, which is translated in Hill 1994, 112–13). Yet, it is worth pointing out that Jesus is not in fact tempted to jump off a cliff, but from the roof of a temple. Furthermore, in relation to phrenitis, Augustine’s use of praeceps also echoes a warning given by Caelius Aurelianus, in such a way as to suggest that the concern is to prevent phrenetic patients not from running off the edges of cliffs, but rather from falling out of windows. Cael. Aur., Acut. 1, 1.9.58: Quomodo curiationibus principio locus aptandus est, iacere oportet phreneticos in
thus, more so than if one took care that the other was seized and tied up? And yet, one would seem most troublesome and hostile to him, at the very time when one was being most useful and most sympathetic.  

Invoking a now-familiar theme, Augustine justifies therapeutic intervention that is undesirable to the patient on the grounds that therapeutic violence is an act of love. Indeed, it is an act that even the person suffering from phrenitis (the Donatist) will appreciate upon recovery:

Clearly, however, when his health was restored he would give thanks all the more freely as he had felt one to spare him the less. Oh, if only I could show you how many of those Circumcellions we now uphold as sincere Catholics, condemning their own past life and wretched error, because of which they used to think that they were doing for the Church of God whatever they did through their own restless temerity.  

There is symmetry to Augustinian healing practices: The more that the patient resents the therapy they are compelled to receive, the greater their gratitude once their sickness has passed. In this passage, perhaps more clearly than in any other, “Circumcellion” signifies “sick,” while “Catholic” means “with health restored.” The delusion of the Circumcellions—that is, that they act “for the Church of God”—reflects the confidence in one’s own health characteristic of phrenetic patients, founded as it is on preternatural physical strength (in the medical disorder)

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166 Aug., Ep. 93.2, 447.5–11): sed plane salute reparata tanto umerius ei gratias ageret, quanto sibi eum minus pepercisse senisset. o si possem tibi ostendere, ex ipsis circumcellionibus quam multos iam catholicos manifestos habeamus damnantes suam pristinam uitam et miserabilem errorem, quo se arbitrabantur pro ecclesia dei facere, quicquid iniqueta temeritate faciebant.
and “restless temerity” (in the disorder which is Augustinian). Augustine concludes by highlighting the key therapeutic action undertaken in this instance: “Yet, these people would not have been brought to health, had they not been bound like phrenetic patients with the chains of those very laws that displease you.”

Augustine’s emphasis upon the therapeutic necessity of chains is startling. It is not, after all, the chains themselves that bring healing, although they might delay self-harm. One way of understanding the distinction might be to align the chains here with secular or political intervention (“the chains of those very laws”), in contrast to the pharmacological quality of the Eucharist (“he, meanwhile, was making drugs for the sick out of his very own blood”). Yet, this leaves unclear the role of medicinal speech: Do Augustine’s sermons, polemical pamphlets, and letters, work to heal his religious opponents, or merely to bind them, whether for their own protection or in preparation for healing? The philosophical tradition teaches us that words and

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168 Tying down the patient was common in ancient treatment for phrenitis, according to Augustine’s contemporary, the North African medical writer Caelius Aurelianus, Acut. 1, 1.9.65: at si exilire de lecto uiderimus nimietate furoris, melius erit plurimis uti ad remedium ministris, sed qui possint lenitate retinere .... uel si defuerint qui ut supra diximus teneant, aut ipsorum uisu commoti fuerint aegrotantes, ligationibus utimur, sed praetectis lana aut ueste locis quos uinculis nectimus, ne maior utilitate quiescendi imprimatur uexatio. “But if we see [the patient] leaping out of bed in excess of madness, it will be better to use as remedy many attendants, who restrain [the patient] with gentleness .... If, however, there are insufficient attendants to hold [the patient] as we said above, or if sick people are disturbed by the sight of those [attendants], then we use bonds; but the places which we bind with chains are first protected by wool or cloth, so that an injury greater than the usefulness of soothing [them] might not be stamped [sc. upon the patient’s skin].” Gourevitch and Gourevitch 1998, 508 take Augustine’s emphasis upon tying up the patient to indicate his familiarity with the challenges of contemporary psychiatric practice. Cf. Brown 2000 [1967], 234: “Augustine’s view of the Fall of mankind determined his attitude to society. Fallen men had come to need restraint. Even man’s greatest achievements had been made possible only by a ‘strait-jacket’ of unremitting harshness.”
rhetoric have a medicinal power. Nonetheless, the line is sometimes blurred, as we see in Augustine’s treatise *On the grace of Christ and original sin*.

Here, Augustine discusses the punishment of Caelestius, an associate of Pelagius. Caelestius had been brought before Pope Zosimus and condemned for his view that human beings can attain perfection through virtuous behaviour, and (therefore) that babies are born free from original sin. His treatment, which was, according to Augustine, more therapeutic than punitive in orientation, nonetheless involved being metaphorically bound: Pope Zosimus “tied up [Caelestius] with his own questions and that man’s responses” in order to prevent him from “being carried headlong” (*ferri ... praecipitem*) or falling “into that precipice” (*in illud abruptum*). When Caelestius promised to condemn whatever was condemned by the See of Rome, “he was treated gently, just like someone suffering from phrenitis, so that he might calm down”; nonetheless, “it was believed that he should not yet be released from the chains of excommunication.”

Caelestius is bound by the chains of speech and legal intervention. Augustine seeks to emphasise here a continuity between theological defeat and political or religious sanction. His solicitation of formal measures against local enemies is no more than a continuation of his daily sermons and his occasional debates; it is certainly not a form of persecution. To the contrary, 

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169 See, in particular, Gorgias’s *Helen* and Plato’s *Phaedrus*. The *pharmakon* in Plato’s *Phaedrus* is discussed most famously in Derrida 1981 [1968], but perhaps more usefully for our purposes in de Romilly 1977. See also the controversial work of Lain Entralgo 1970, which focuses upon the continuity between verbal charms and the verbal “medicine” of philosophy.


171 Aug., *Gr. et pecc. or.* 2, 6.7: *sed multum misericors memoratae sedis antistes, ubi eum uidot ferri tanta praesumtione praecipitem tamquam furentem, donec, si posset fieri, resipisceret, maluit eum sensim suis interrogationibus et illius responcionibus colligare quam destricta feriendo sententia in illud abruptum, quo iam propendere uidebatur, impelle re.*

172 Aug., *Gr. et pecc. or.* 2, 7.8: *atque ita uelut phreneticus, ut requiesceret, tamquam leniter fotus a uinculis tamen excommunicationis nondum est creditus esse solvendus.*
through the medical lens that Augustine constructs, legal suppression of Donatists and Pelagians alike is therapeutic intervention that turns pain to a beneficial end.

**Conclusion**

The strength that was characteristic of phrenitis enabled Augustine to explain how another’s self-perception as spiritually healthy could be absorbed into a narrative of Christianity as *the* healing religion. The self-masking properties of phrenitis and the propensity of phrenetic patients to resist medical treatment made the disease a valuable paradigm for demonstrating that individuals could be sick while experiencing themselves as healthy. Augustine justified his intervention into the spiritual lives of his religious opponents by asserting their mental incompetence.

As a disease of the brain, phrenitis also inscribed within the body the cognitive, affective, and behavioural deviance that Augustine identified in his opponents. The body was crucial to late antique accounts of sin and salvation, as demonstrated most influentially by Peter Brown, with clarification and expansion by historians such as Teresa Shaw, Elizabeth Clark, and Caroline Walker Bynum.\(^{173}\) Recall Castelli’s observation, quoted also in chapter three: “The paradox of early Christianity, of course, is that its apparent rejection of the body as a shadowy and possible shell of the immortal soul is located within an ideological and practical matrix thoroughly focused on the body.”\(^{174}\) In early Christianity, the body was the locus of human mortality, weakness, and sin.\(^{175}\) At the same time, Christian practices of asceticism and martyrdom relied upon an understanding of “the body as a blank canvas for Christian

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\(^{174}\) Castelli 1992, 137.

\(^{175}\) This is well illuminated by the second of the two semantic fields that Hannah Hunt identifies as associated with “flesh”: first there is “flesh as ontological entity”; second, there is “living according to the flesh as a moral choice” (Hunt 2012, 2).
inscription.” Not only this, but the resurrection that Christians hoped for was a resurrection of the body. While Christianity might share with pagan philosophy an emphasis upon the transcendence of the soul, Christian spiritual practice demanded the body as its raw material, and aimed itself at an embodied end. The invocation of phrenitis as a model for spiritual sickness weakens the already porous boundary between deviance as a product of the body (not within one’s control) and deviance as a product of the soul (within one’s control). It thus creates space for a vision of psychic deviance—that is, sin—as a product of bodily and psychic disorder, and so both in one’s control and not in one’s control. Phrenitis exemplifies the condition of being an embodied human being wherein one is not always in control of one’s own psychic health. This was, precisely, Augustine’s understanding of original sin. “Thus,” as Peter Brown writes, “the Christian life, as seen by Augustine, could only be a long process of healing.”

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176 Hunt 2012, 3. See also ibid., 53: “As a temporary dwelling place for the soul the body’s potential for transformation could affect the whole person.” Castelli 1992, 140 frames this from the opposite perspective, emphasising that even though asceticism is a bodily practice, it is oriented toward the health of the soul: “Asceticism in this text is clearly a bodily piety, but it is explicitly described as a set of practices whose effect is only incidentally physical; more important for Syncletica is that asceticism has mental and spiritual resonances.” Nonetheless, while bodily effects might be merely incidental, the bodily aspect of ascetic practices (toward spiritual goals) remains central, and stands in ongoing tension with the idea that bodily experience is “incidental” to the journey of the soul. This is affirmed a few pages later by Castelli’s observation that “[t]here is certainly a tension in this text between a kind of dualism which understands material life in this world to be of no consequence, and a kind of embeddedness or interwovenness of spirituality and embodiedness which undercuts simple dualisms of body/spirit.”

177 As Bynum 1995a makes clear in penetrating fashion.

178 Hunt 2012, 17 considers the “transformation” of pagan philosopher into Christian holy man to be one of privatisation, a turning inward from public office to the cultivation of the self: “The evolution of the Christian ascetic from the pagan sage thus moved holiness from city to desert, from public to private, from outer self to inner self. This affected how the body was accepted as part of the human self.”

179 See Wetzel 2012 for a lucid overview of Augustine’s teachings on original sin.

One of the biggest theological questions that Augustine faced was how one must be “healed” (that is, saved): by virtue, or by grace. This was, above all, a question provoked by the teachings of Pelagius and Caelestius. Could the individual earn salvation? Augustine argued vehemently to the contrary, but this left him with an awkward proposition: that spiritual discipline contributes nothing to salvation, and furthermore that God has already marked out those who will be saved, in some sense predetermining the damnation of the rest. A version of this problem is illuminated by the Augustinian theologian Ellen Charry:

The third and last book of On Free Will tackles the difficult question of divine foreknowledge and freedom of the human will, asking whether God makes us happy or whether we make ourselves happy. Augustine wants to maintain the force of both positions, and he ultimately argues that even if God knows that one will be happy a year hence, this does not rob one of the will to happiness now. This may not be a very satisfactory answer, and Augustine later struggles with it against both Pelagius and John Cassian. He teeters on a trembling fence, fearing that any concession of power to us would undermined God’s power, but also knowing that denying all power to humans would destroy moral responsibility. It is not clear that Augustine ever resolves this tension.

As Charry points out elsewhere, we might replace the adjective “happy” here with the word “saved.” Human beings have, in Augustine’s conception of salvation, a moral responsibility to make themselves happy, that is, to be healed; at the same time, their capacity to attain happiness is dependent upon factors beyond their control—namely, the intervention of God.

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183 Charry 2010, 35. For a briefer account of Augustine’s response to the question of why some are not saved, see Karfíková 2012, 186. See Couenhoven 2013 for an argument that Augustine came, in the end, to reject free will as a defence of theodicy.

184 Charry 2010, 61: “Perhaps the most distinctive feature of Augustine’s doctrine of happiness is that it heals the soul.”
Augustine sought a resolution to this problem through his conceptualisation of original sin, grace, and free will. Yet, as Charry makes clear, the tension was never definitively settled, and theologians continue to try to resolve it. In Augustinian phrenitis, we might observe not only a spiritual illness that causes the experience of strength in illness, but also a translation of the problem of predetermination from the divine to the bodily realm. Organic mental illness illustrated how embodiment might render one incapable of actions and attitudes conducive to one’s spiritual health. In this respect, it offered a paradigm within which to understand human rejection of God as an action which one might not be able to control, but the effects of which one nonetheless suffered. One might, after all, not intend to run off the edge of a cliff (or jump headlong out of a window), but one will nevertheless strike the ground with the same force.

Conclusion

Phrenitis was a cardinal point on the Christian compass of self-governance, yet it has been almost entirely ignored in the history of late antiquity. Closer attention to the medical context of phrenitis, and to its re-deployment in Christian texts, nuances the history of “crazy” in late antiquity by showing us how it was embodied, and what implications that embodiment had for thinking about deviance. Illness of the brain, as we saw in the concerns expressed by Macarius, could compromise one’s spiritual strength by undermining the self-control necessary for spiritual discipline. At the same time, the very practices encouraged among ascetic practitioners affected the condition of the brain in ways that could threaten to tip over into permanent delirium. We hear echoes of this in Augustine, whose concerns about asceticism centre upon not its physiological but its affective consequences. Relying upon one’s own discipline and perfection

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185 One influential example is Stump 1996.
is, like the delirium caused by drying out one’s brain, a form of phrenitis provoked by trust in one’s own righteousness. It is the responsibility of the Christian bishop to intervene in the sickness of those who do not know what they are doing, regardless of whether therapeutic intervention is desired.

Sickness of the brain runs as a thread through the wide variety of sources considered in this chapter. What they share—and what goes unnoted in most studies of asceticism, soteriology, and responsibility in early Christian thought—is a concern for the role of the brain, distinct from the rest of the body, in shaping psychic health. This corroborates the findings of chapter three. What this chapter further suggests is that sickness of the brain not only compromised the health of the soul, but also represented psychic illness, both affective and soteriological in conception. Brain fever undermined human responsibility; it also represented the affective disorder of vainglory or pride; finally, it stood in for the sickness of sin and the human rejection of God. The relationship between sickness of the brain and sickness of the soul was over-determined. The layering of causal and analogical relationships contributed to blurring the strict boundary between body and soul that early Christian thinkers inherited from the Greco-Roman philosophical tradition. With the brain as participant in both worlds, the roots of mental and spiritual disorder could not be easily parsed.
CONCLUSION

This dissertation has examined the brain as it appears in Christian texts of the fourth and fifth centuries CE. Above all, we have concerned ourselves with the relationship between the concepts of brain and soul, and with the therapeutic role of Christian leaders in tending to both. As we have seen, the concept of the brain lay at the intersection of material and immaterial worlds and functioned as a pivot between the two.

The brain was a fruitful conceptual resource for early Christian theologians, who drew upon it in their attempts to reconcile the paradox of the transcendent soul with the enduring importance of the human body. It is thus no coincidence that ventricular localisation—a theory of brain function that emphasises the spatial distribution of discrete psychic activities—first developed in the fourth century CE, nor that it was adopted and transmitted primarily by ecclesial writers. Neither is it by chance that John Chrysostom highlighted the vulnerability of the brain to luxurious living, nor that Augustine drew habitually upon disease of the brain as a medical model for religious deviance. The brain took shape at the intersection of concerns about the body/soul relationship and the cultivation of both.

This study has consisted of a series of focused readings of often metaphorical encounters with the brain. We began with dense exposition of the brain as it was conceptualised as a material object in the Greek medical and philosophical traditions; throughout the discussion which followed, moreover, we returned iteratively to the medical and philosophical contexts from which fourth- and fifth-century Christian authors drew their knowledge about the brain. Yet, we have paid far more attention to how non-medical experts elaborated upon the brain. Rather than use the writings of theologians and preachers purely as windows into medical theories about the brain in this period, I have dwelt at length on the imaginative and rhetorical
work in which the concept of the brain is employed in religious texts. It has been my premise that the capacity of the brain to signify beyond its technical definition can tell us a great deal about the evolution of the brain as a conceptual resource within both popular and learned understandings of medicine, theology, the body, and the soul.

What, then, do late antique Christian authors add to the history of the brain? I have argued throughout this dissertation that the brain was a boundary object in early Christian thought, participating in the distinct realms of body and soul, *psuchê* and *sôma*. As such, it emblematised the human being, who was similarly positioned at the intersection of earthly and heavenly kinds, capable of turning downward or upward, in accordance with training, both intellectual and corporeal, in accordance with the cultivation of habits and the habituation of affects, and in accordance with each individual’s own evolving capacity for choice. The plasticity of the human being was the condition for psychic agency that was somatically grounded.  

Care for the brain was crucial in early Christianity because it was through practices of self-cultivation that one shaped the conditions for one’s own freedom. How one chose to cultivate one’s brain had salvific implications.

The high stakes of cerebral self-care indicate an importance for the brain that has rarely been attended to in studies of late antique Christianity, despite the attention directed toward “care of the self” and “care of the body” in the wake of Foucault’s influential *History of Sexuality*. The brain functions in theological and pastoral discourse as a generative site for mediating

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1004 Cf. the concept of “biopossibility” in Willey 2016. Biopossibility refers to the notion that one’s biological condition produces and limits one’s behavioural possibilities, but is not determinatively linked to behavioural expression. That is to say, in contemporary terms, that no given gene will necessarily produce a specific behavioural output, but creates the conditions for it. In a similar way, I argue, the constraints of the brain were understood to produce the conditions for the freedom of the will in early Christian thought.

1005 Foucault 1986 [1984].
spiritual and social concerns. Brain health provided a framework for talking in the most literal terms about the intersection of medicine and morality. While Christian rhetoric of this period was permeated by the “medical metaphor,” the brain occupied a privileged position as the material site where spiritual salvation might actually be enacted, might actually be at stake. The metaphorical relationship between the health of the body and the health of the soul was consummated in the brain, which became a crossing-place for the traffic of meaning between the material and immaterial spheres. The coordinates for reality slipped from body to soul and back again through the passageways of the brain.

I have argued that the “brain” and its attendant metaphors enabled preachers and theologians to “say things that [could not] be said in any other way.”1006 Precisely what those things were has emerged through close analysis of the brain as it was transformed toward various discursive ends. The brain functioned as a conceptual tool through which the two basic halves of reality might be conjoined. In practical terms, the brain could explain how care of the body—an essential component of Christian identity in this period—might conduce to the health or disease of the soul. More abstractly, the twofold nature of the brain captured the ambivalence of human responsibility, the limitations of agency and free will. As a member of the material body, the brain was subject to destruction and disease; as representative of the hêgemonikon, the vulnerability of the brain provided a language for describing the vulnerability of the human soul, in spite of its “likeness” to God.

I have sought to historicise the brain at a critical juncture in its conceptual development, that is, at the encounter between medicine and theology in the early decades of imperial Christianity. The theological and the pastoral stakes in presenting the brain governed its

1006 Citing Harrison 2007, 140.
emergence, I have suggested, as an instrument defined by cavities, each responsible for enabling discrete psychic activities, and its central role in popular frameworks of self-care. Medical literature and expert knowledge had created the conditions for imagining the brain as an instrument of cognitive and social engagement, but it is in Christian texts that we find this potential reshaped to highlight its moral and salvific implications. The moral dimension of brain health is rooted in early Christian engagement with the brain as a node through which to link the material and the immaterial aspects of human nature, and through which to emphasise the fundamental importance of appropriate care of the body to Christian identity.

These conclusions raise a number of questions which we can touch on but briefly here. First, to what extent can we embed late antique Christian emphasis on the moral consequences of brain health within a broader web of medical and popular understandings of the human body? To trace the influences upon figures such as John Chrysostom and Augustine in their articulation of these consequences would require much closer attention to the brain and cerebral disorders as they appear in medical texts of the period, not only the works of Galen, but also the often untranslated—indeed, sometimes unedited—works of medical authors such as Theodorus Priscianus, Oribasius, and Alexander of Tralles. It would also require an examination of the brain as it appears in non-Christian texts, such as Macrobius’s *Saturnalia* and Athenaeus’s *Dinner Party Sophists*, where we catch glimpses of the brain as it participated in dialogue about the human being outside of technical contexts.

Finally, such a question demands that we track the trajectory of the brain in the period after the fifth century, searching in particular for traces of the late antique brain in medieval and early modern sources, both theological and medical in nature. While such work has been done to a certain extent for ventricular localisation, which survived in recognisable form until the
sixteenth century, we remain largely in the dark regarding the reception and the influence of writers such as Augustine, Gregory, and John Chrysostom on later formulations of the brain in its relationship to body and to soul. Yet, these authors were read and copied, were preached and were studied, to a far greater extent than were medical texts. It is in their reception, then, that we might trace a thread through from late antique to modern anxieties about cerebral vulnerability, and for the hopes that ground the well-being of the soul in the health of the brain.
ABBREVIATIONS AND CRITICAL EDITIONS

All texts drawn from the *Patrologia Graeca*, the *Patrologia Latina*, or Kühn’s edition of Galen are indicated in the text, with reference to volume, page, and line number where appropriate. The following abbreviations are used:


Other Abbreviations
CCSL = (1953–). *Corpus Christianorum Series Latina*. Turnhout: Brepols.
CMG = (1908–). *Corpus Medicorum Graecorum*. Berlin; Leipzig: Teubner.
GCS = (1891–). *Die Griechischen Christlichen Schriftsteller der ersten Jahrhunderte*. Berlin: Akademie Verlag.
MiAg = (1930–). *Miscellanea Agostiniana*. Roma: Typis Polygottis Vaticanis.
NRSV = New Revised Standard Version.
RB = (1884–). *Revue Bénédictine*. Belgium: Abbaye de Maredsous.
Primary Sources
The list below expands the abbreviation of each primary source used, and provides the critical edition where not covered by the series abbreviations presented above.


Alex. Aphr. = Alexander of Aphrodisias

*De an.* = *De anima*. In I. Bruns (Ed.). (1887). *Alexandri Aphrodisiensis praeter commentaria scripta minora*. CAG suppl. 2.1.


Arist. = Aristotle


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Athan. = Athanasius


Exp. in Ps. = Athanasius, Expositiones in Psalmos.

Aug. = Augustine of Hippo


C. Iul. = Contra Iulianum
Basil = Basil of Caesarea


Hom. de grat. act. = Homilia de gratiarum actione

In eb. = In ebriosos

In Ps. = Homiliae in Psalmos


Gr. et pecc. or. = De gratia Christi et de peccato originali. In C. F. Urba and J. Zycha (Eds.). (1902). De perfectione iustitiae hominis [...]. CSEL 42.


Nat. et gr. = De natura et gratia. In C. F. Urba and J. Zycha (Eds.). (1913). De peccatorum meritis et remissione et de baptismo parvulorum [...]. CSEL 60


S. dom. m. = De sermone Domini in monte = In A. Mutzenbecher (Ed.). (1967). De sermone Domini in monte libri duos. CCSL 35.

S. = Sermo


Cic. = Cicero


Diocl. = Diocles of Carystus


Diog. Apoll. = Diogenes of Apollonia


Erasistr. = Erasistratus of Ceos

Eus. = Eusebius of Caesarea

*Comm. in Ps. 11* = *Commentaria in Psalmos*


Evagr. = Evagrius of Pontus

*De or.* = *De oratione*

Gal. = Galen of Pergamum

*AA* = *De anatomicis administrationibus*
*Ars med.* = *Ars medica*
*Caus. resp.* = *De causis respirationis*
*Caus. symp.* = *De symptomatum causis*
*De diff. febr.* = *De februum differentiis*
*De diff. puls.* = *De differentiis pulsuum*
*Hipp. elem.* = *De elementis ex Hippocrate*
*Hipp. Epid.* = *In Hippocratis epidemiarum libri, I–VI*
*Hipp. prorrh.* = *In Hippocratis de praedictionibus*
[Int.] = *Introductio seu medicus*
*Loc. aff.* = *De locis affectis*
*MM* = *De metodo medendi*
*Mot. musc.* = *De motu musculorum*
*Nat. fac.* = *De naturalibus facultatibus*
*Opt. doct.* = *De optima doctrina*
PHP = De placitis Hippocratis et Platonis
Plen. = De plenitudine
QAM = Quod animi mores corporis temperamenta sequuntur
[Rem.] = De remediis parabilibus
SMT = De simplicium medicamentorum [temperamentis ac] facultatibus
Temp. = De temperamentis
Thras. = Thrasybulus sive utrum medicinae sit an gymnasticae hygiene
Trem. palp. = De tremore, palpitatione, convulsione et rigore
UP = De usu partium
Greg. Nyss. = Gregory of Nyssa
   De an. et res. = De anima et eius resurrectione
   Op. hom. = De opificio hominis
Hermogenes
Herophil. = Herophilus
Hier. = Jerome
C. Vigil. = Contra Vigilantium

Hipp. = Hippocrates
Aēr = De aëre, aquis, locis
Aph. = Aphorismi
Carn. = De carnibus
Int. = De internis affectionibus
Morb. = De morbis libri I, II, III
Morb. sacr. = De morbo sacro
Mul. = De morbis mulierum
Nat. Hom. = De natura hominis
Vict. = De uictus ratione I–IV

Iamb. = Iamblichus of Chalcedon

Isid. = Isidore of Seville
Diff. = De differentiis uerborum
Isid. Pel., Ep. = Isidore of Pelusium, Epistula
Joh. Chrys. = John Chrysostom
Ad Stag. = Ad Stagirium a daemone vexatum


De Laz. conc. = De Lazaro conciones 1–7

De prec. [Sp.] = De precatione


In Gen. hom. = Homiliae in Genesim 1–67

In 1 Cor. hom. = In epistulam I ad Corinthios homiliae 1–44

In 1 Tim. hom. = In epistulam I ad Timotheum homiliae 1–18


In Eph. hom. = In epistulam ad Ephesios homiliae 1–24

In Heb. hom. = In epistulam ad Hebraeos homiliae 1–34

In Joh. hom. = In Iohannem homiliae 1–88

In Matt. hom. = In Matthaeum homiliae 1–90

In paralyt. dem. = In paralyticum demissum

[In Ps. 118] = In psalmum 118

Princ. act. hom. = In principium Actorum homiliae 1–4

Pecc. fratr. non evulg. = Peccata fratrum non evulganda


Lib.


Orib. = Oribasius


Phil. = Philo


Pl. = Plato

*Alc. 1* = *Alcibiades i*

*Gorg.* = *Gorgias*

*Men.* = *Meno*
Phd. = Phaedo
Phdr. = Phaedrus
Pol. = Politicus
Protag. = Protagoras
Resp. = Respublica
Symp. = Symposium
Tht. = Theaetetus
Tim. = Timaeus


Praxag. = Praxagoras


Sen. = Seneca


Tert. = Tertullian

Thdt. = Theodoret of Cyrrhus

De prov. = De providentia orationes decem


Haer. fab. comp. = Theodoret of Cyrrhus, Haereticarum fabularum compendium


Them. = Themistius

In PN. = In parva naturalia commentarium. In P. Wendland (Ed.). (1903). Themistii (Sophoniae) in parva naturalia commentarium. CAG 5.6.


Interpret. ep. i ad Cor. = Interpretatio in epistulam i ad Corinthios

Theophil. Protosp. = Theophilus Protospatharius


Theophr. = Theophrastus of Eresius


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