

LEVELS OF EXPLANATION IN GALEN

I. THE PROBLEM

Galen's œuvre presents a remarkably varied body of texts—varied in subject matter, style, and didactic purpose. Logical tracts sit alongside tomes of drug-lore; handbooks of dietetics alongside anatomical investigations; treatises of physiology alongside ethical *opuscula*. These differences in type have received some, though as yet insufficient, scholarly attention. Mario Vegetti¹ demonstrated the coexistence of two 'profili' or images of the art of medicine: Galen presents the art as an Aristotelian deductive science, on the one hand, and as a technician's craft, on the other. The former image, offering an ambitious elevation of the doctor's cultural status, has medicine as a philosophical *epistēmē* analogous to the mathematical sciences, exercised above all to provide causal accounts and logical demonstrations, and centred on the knowledge of anatomy. The second image is that of the clinician, concerned with the body in its pathological manifestations and using as its prime model the 'pre-anatomical' theory of the humours. And the content of the treatises shifts in relation to this dual image: 'profilo alto' and 'profilo basso' are reflected in different types of work. Polemical writings such as the *Protrepticus*,² as well as the great treatises of anatomy and physiology, *De usu partium*³ and *De naturalibus facultatibus*,⁴ present medicine in the former light, while works like *De temperamentis*⁵ or *Quod animi mores*⁶ base themselves on humoral pathology and accord with the earlier, artisan-like image.

Now, Vegetti's analysis is primarily concerned with images of medicine and their social implications within ancient society;⁷ but he simultaneously makes a somewhat

¹ M. Vegetti, 'Modelli di medicina', in V. Nutton (ed.), *Galen: Problems and Prospects: A Collection of Papers Submitted at the 1979 Cambridge Conference* (London, 1981), repr. in Vegetti, *Tra Edipo e Euclide: forme del sapere antico* (Milan, 1983). See now also his fuller discussion, 'L'immagine del medico e lo statuto epistemologico della medicina in Galeno', in *ANRW* II.37.2 (1994) 1672–1717.

² Ed. J. Marquardt in *Claudii Galeni Pergameni Scripta Minora*, vol. I (Leipzig, 1884) and A. Barigazzi, *De optimo docendi genere, Exhortatio ad medicinam (Protrepticus)*, *Corpus Medicorum Graecorum* V.1.1 (Berlin, 1991), trans. P. N. Singer, in *Galen: Selected Works* (Oxford, 1997). Page references to Galen's works are wherever possible by volume and page of C. G. Kühn's edition (*Claudii Galeni Opera Omnia*, 22 vols [Leipzig, 1821–33]), abbreviated 'K'; but in cases where a more modern edition exists this has been cited at the first reference to the work, as has any English translation.

³ *De usu partium libri XVII*, ed. G. Helmreich, 2 vols (Leipzig, 1907–9); trans. M. T. May, *Galen on the Usefulness of the Parts of the Body*, 2 vols (Ithaca, NY, 1968).

⁴ Ed. G. Helmreich in *Claudii Galeni Pergameni Scripta Minora*, vol. III (Leipzig, 1893).

⁵ *De temperamentis libri III*, ed. G. Helmreich (Leipzig, 1904), trans. Singer, in *Galen: Selected Works*.

⁶ Ed. I. Müller in *Claudii Galeni Pergameni Scripta Minora*, vol. II (Leipzig, 1891), trans. Singer, in *Galen: Selected Works*.

⁷ There is not a straightforward superiority of one image over the other. Galen's attitude is perhaps best summarized in the remark he attributes to the emperor Marcus Aurelius, that Galen is 'first among doctors, but the one and only philosopher' (τῶν μὲν ἱατρῶν πρῶτον . . . τῶν δὲ φιλοσόφων μόνον, *De praecognitione* (ed. V. Nutton, *Corpus Medicorum Graecorum* V.8.1, Berlin, 1979) 11, K XIV 660). He revels in the self-image of a philosopher and in his ability to give verbal accounts—an ability which may provoke hostile criticism from other kinds of practitioner; cf. *De praecognitione* passim, *De optimo medico cognoscendo* (Arabic text ed. and trans. A. Z. Iskandar, *Corpus Medicorum Graecorum, Supplementum Orientale* IV [Berlin, 1988]), esp. p. 95

different claim regarding the divergent conceptions of the body—or physical theories—implied by the two ‘profili’. Vegetti identifies a clear discrepancy between the anatomical-physiological model of a body functioning perfectly and in accordance with its divine nature, and the humoral-pathological model of a body composed of a mixture of elements and continually susceptible to illness. It is this latter discrepancy which we shall consider in more detail in this paper. The question is: do the different kinds of Galenic text entail different—conflicting or incommensurable—physical theories, or are they to be explained as manifestations of a single underlying theory, the differences arising from context? In order to be able to address this question directly, it will be helpful to consider some of the other terms in which the characteristics of different Galenic texts can be analysed.

I have elsewhere suggested that a genre-based approach is helpful in illuminating the differences: Galen is deeply affected in his output by the specific intellectual forebear—Platonic psychology, Aristotelian biology, Alexandrian medicine and anatomy, Hippocratic or later dietetics—which he has before him as he writes.⁸ This adoption of the language of a particular intellectual tradition, in combination with the polemical nature of many of his works, whereby the destruction of someone else’s position takes precedence over the advancing of positive views of Galen’s own, means that it is quite difficult to gain a precise understanding of certain of his scientific theories, and of the relationship between different areas of scientific theory. It is, for example, not immediately obvious how the theory of the soul enunciated in Galen’s specifically psychological works relates to the theory of emotion implied by works concerned with the heart, innate heat, and *pneuma*, in particular the treatises on the pulse;⁹ or how the faculty-based accounts of psychophysical function in *De placitis*

and *Thrasylbulus* (ed. G. Helmreich in *Scripta Minora*, vol. III [Leipzig, 1893], trans. Singer, in *Galen: Selected Works*) for the terms in which he contrasts himself with rivals: they lack his understanding of causes, his analytical abilities, above all the ability to make the correct distinctions. And the merely manual workers in medicine (χειρουργοί) are looked down on (e.g. *De methodo medendi* VI.6, K X 454–5; cf. the attack on Thessalus, the apparently artisan founder of the Methodic school of medicine, in *De methodo medendi* I.1, K X 5). But Galen is at pains to emphasize the need for long practical experience and training of the doctor’s perceptive faculties (see esp. *De dignotione pulsorum*, I.1, K VIII 770–1); and regularly attacks those who are more interested in words than things. More generally on the ‘philosopher-doctor’ in Galen, see my ‘Galen on the Soul: Philosophy and Medicine in the Second Century AD’ (Ph.D Diss., Cambridge, 1993), ch. 1 (esp. pp. 68–73), with the bibliography there cited.

⁸ Platonic psychology: *De peccatis* and *De affectibus* (ed. J. Marquardt in *Scripta Minora*, vol. I [Leipzig, 1889]; trans. in P. W. Harkins and W. Riese, *Galen on the Passions and Errors of the Soul*, [Ohio, 1963] and in Singer, *Galen: Selected Works*) and *De moribus* (which survives only in an Arabic summary, trans. J. N. Mattock, ‘A Translation of the Arabic Epitome of Galen’s Book περὶ ἡθῶν’, in S. M. Stern, A. Hourani, and V. Brown (edd.), *Islamic Philosophy and the Classical Tradition: Essays Presented by his Friends and Pupils to Richard Walzer on his Seventieth Birthday* [Oxford, 1973]); Aristotelian biology: *De usu partium*; Alexandrian medicine and anatomy: e.g. *Anatomicae administrationes* and the body of works on reading the pulse; dietetics: e.g. *De sanitate tuenda* (ed. K. Koch in *Corpus Medicorum Graecorum* V.4.2 [Leipzig, 1923], *De alimentorum facultatibus* (ed. G. Helmreich in *ibid.*) and several of the Hippocratic commentaries. See my ‘Galen on the Soul’, pp. 118–21 and ch. 2 generally. V. Nutton, ‘Galen and Medical Autobiography’, *PCPS* 198 (n.s. 18) (1972) 50–62, repr. in *From Democedes to Harvey: Studies in the History of Medicine* (London, 1988), explored the relation of one of Galen’s works, *De praecognitione*, to a genre (cf. his remarks in the Prolegomena to his edition of the work, pp. 59–61); but the approach has not been followed up. (Cf. also R. Walzer, ‘A Diatribe of Galen’, *HTR* 47 [1954] 243ff., repr. in *Greek into Arabic: Essays on Islamic Philosophy* [Oxford, 1962] on Galen’s *De moribus*, with my remarks, ‘Galen on the Soul’, pp. 210–11.)

⁹ See P. Manuli, ‘La passione nel *De placitis Hippocratis et Platonis*’, in P. Manuli and M. Vegetti (edd.), *Le opere psicologiche di Galeno: atti del terzo colloquio galenico internazionale*,

*Hippocratis et Platonis*¹⁰ relate to the moral psychology of *De peccatis* and *De affectibus* (which consider the soul practically in isolation from the body).

One may, further, consider Galen's own acknowledgement of differences in genre and, in particular, of the notion that different kinds of statement may be made according to different contexts or audiences, without undermining belief in a single underlying theory. Thus, in *De placitis Hippocratis et Platonis*, Hippocrates spoke 'as a doctor' and Plato 'as a philosopher'—but their central beliefs are the same;¹¹ and in *De substantia naturalium facultatum* it is accepted that a philosopher (again, Plato is the example) may vulgarize his doctrines for audiences other than his inner circle of disciples.¹² The style of certain Hippocratic treatises, too—their *βραχυλογία*—can be used to explain why it is not immediately obvious that Hippocrates' views on, say, massages are in agreement with Galen's.¹³ As to his own works, Galen is equally explicit: they do not all have the same 'purpose, function or subject-matter'.¹⁴ Some treatises are for friends and are geared entirely towards their state of knowledge; some are for young beginners; and the dedicatee's particular specialism, too, may affect content.¹⁵

Pavia, 10–12 settembre 1986 (Naples, 1988) and ch. 3 of my 'Galen on the Soul': the point is essentially that elements of a heart-centred psychophysiology appear to interfere with Galen's 'official' tripartition. As for difficulties in actual understanding of a scientific theory, see for example the texts regarding movement of the blood and the purpose of breathing discussed in C. R. S. Harris, *The Heart and the Vascular System in Ancient Greek Medicine from Alcmaeon to Galen* (Oxford, 1973) and in D. J. Furley and J. S. Wilkie, *Galen on Respiration and the Arteries* (Princeton, 1984), and note the difficulty which those scholars experience in arriving at unequivocal interpretation.

¹⁰ *De placitis*, ed. P. De Lacy, *Corpus Medicorum Graecorum* V.4.1.2, 3 vols (Berlin, 1980–4).

¹¹ *De placitis* VI.8, K V 577.

¹² *De substantia naturalium facultatum*, K IV 757–8. (This treatise is in fact a fragment of a late summation, 'On his own opinions', preserved in Latin; see V. Nutton, 'Galen's Philosophical Testament: "On my own Opinions"', in J. Wiesner (ed.), *Aristoteles: Werk und Wirkung: Paul Moraux gewidmet*, Pt II: *Kommentierung, Überlieferung, Nachleben* [Berlin and New York, 1987].)

¹³ For example, *De sanitate tuenda* II.4, K VI 105. Of course, this form of argument has a strong rhetorical sense in Galen, assisting his appropriation of the views of 'the ancients' as consonant with his own. This appropriation is often extraordinarily tendentious, particularly in the case of Hippocrates (see W. D. Smith, *The Hippocratic Tradition* [Ithaca, NY and London, 1979]; P. Manuli, 'Lo stile del commento', in F. Lasserre and P. Mudry [edd.], *Formes de pensée dans la Collection Hippocratique* [Geneva, 1983]; id., 'Traducibilità e molteplicità dei linguaggi nel *De placitis* di Galeno', in G. Cambiano [ed.], *Storiografia e dossografia nella filosofia antica* [Turin, 1986]; M. Vegetti, 'Tradizione e verità: forme della storiografia filosofico-scientifica nel *De placitis* di Galeno', in *ibid.*; G. E. R. Lloyd, 'Galen on Hellenistics and Hippocrateans: Contemporary Battles and Past Authorities', in his *Methods and Problems in Greek Science* [Cambridge, 1991]; P. N. Singer, 'Notes on Galen's Hippocrates', in M. Vegetti and S. Gastaldi [edd.] *Studi di storia della medicina antica e medievale* [Florence, 1996]—though there are some remarkable features of the Galenic interpretation of Plato too; see, most recently, my 'Galen on the Soul', ch. 3.) (On Galen's Hippocratic commentaries see now also D. Manetti and A. Roselli, 'Galen commentatore di Ippocrate', in *ANRW* II.37.2 [1994] 1528–1635.)

¹⁴ οὐτε γὰρ εἰς αὐτῶν ἀπάντων ὁ σκοπὸς οὔτε δύναμις οὐτ' ἐπαγγελία, *De ordine librorum* (ed. I. Müller in vol. II of *Scripta Minora* [Leipzig, 1891], trans. Singer, *Galen: Selected Works*) I, K XIX 49. On different audiences see I. Garofalo and M. Vegetti, *Opere scelte di Galeno* (Turin, 1978), p. 1001; also Manuli, 'Lo stile del commento' on the notion of the Hippocratic commentary as a literary essay for the cultivated amateur rather than a work of actual medical usefulness. Note that its 'uselessness' in this case by no means detracts from the cultural cachet of the enterprise.

¹⁵ *Ad Glauconem de methodo medendi* I.1, K XI 3–4: καὶ γὰρ ἂν εἶην γελοῖος, εἰ σε διδάσκομι τὰ σὰ ὥσπερ οὐχὶ παρὰ Πλάτωνος αὐτὰ πάλαι μεμαθηκότα. (See D. W. Petersen, 'Galen's "Therapeutics to Glaucon" and its Early Commentators' [Diss. Johns Hopkins, 1974], p. 46, on the view that *Ad Glauconem* was written for the 'layman'.)

There is yet another distinction—again, Galen’s own—between a ‘more logical’ style of analysis and one more closely tied to medical practicalities;¹⁶ and one may consider the difficulties there may be in making the transition between the two styles of analysis *within a single theoretical framework*. I have elsewhere argued¹⁷ that this is a distinction of considerable philosophical interest, raising as it does the possibility of coexistence of different styles of reasoning, and questions of the relation of philosophical first-principles to empirical findings; of medical theory to practice; of discourse to individual or particular facts which may be incommunicable within discourse.¹⁸ Nor is this distinction by any means irrelevant to my argument here: there is, at the very least, a strong structural parallel between this type of distinction between styles of logical analysis and that between levels of physical analysis which we shall be considering below.¹⁹

My present aim, though, is at once narrower and, in a sense, more ambitious than the scope of those larger questions. For all the above analyses of Galenic differences in terms of genre, intellectual purpose, polemical target, audience, social image, and even style of logical analysis may seem to beg a question of central importance; and it is this question that I shall seek to answer in what follows. 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? And I believe that I am justified in attributing to this question ‘central importance’ for two reasons: first, Galen’s enormous historical influence on accounts of biological phenomena should make us wish to gain a more precise picture of his own accounts; secondly, modern characterizations or summations of Galen tend to be confused and confusing in their diversity, ranging from ‘materialist’ to ‘dualist’, from ‘Platonist’ to ‘Stoic’ (including of course ‘eclectic’), from ‘rationalist’ to ‘empiricist’; and this confusion is at least partially due to the fact that the question posed above still awaits a clear answer.²⁰

¹⁶ See *De sanitate tuenda*, IV.1, K VI 233; cf. I.5, K VI 13–14 (λογική τις μάλλον ἢ κατὰ τὴν χρείαν τῆς τέχνης ζήτησις). There is, relatedly, a distinction between theoretical exposition and what is ‘of practical value for therapy’ (e.g. *De usu partium* XVII 1, K IV 351); but note here that what is of practical value is by no means coextensive with the subject-matter of Galen’s great works of therapeutics.

¹⁷ ‘Galen on the Soul’, ch. 2, esp. pp. 87–112.

¹⁸ Consider esp. *Ad Glauconem de methodo medendi* I.1, K XI 2: μηδὲν ἴδιον ἐρμηνεύεσθαι δύναται λόγῳ.

¹⁹ Issues of logic and scientific methodology in Galen have received more detailed attention from recent scholarship than have the specifics of his physical explanations. See e.g. M. Frede, ‘On Galen’s Epistemology’, in Nutton, *Problems and Prospects*, repr. in Frede, *Essays in Ancient Philosophy* (Oxford, 1987); R. J. Hankinson, ‘Galen on the Foundations of Science’, in J. A. López Férez (ed.), *Galeno: obra, pensamiento e influencia: colloquio internacional celebrado en Madrid, 22–25 de Marzo de 1988* (Madrid, 1991) and id., *Galen on the Therapeutic Method, Books I and II* (Oxford, 1991); J. Barnes, ‘Galen on Logic and Therapy’, in F. Kudlien and R. J. Durling (edd.), *Galen’s Method of Healing: Proceedings of the 1982 Galen Symposium* (Leiden, 1991)—none of whom, however, addresses the question of differences across the Corpus which I am raising here. (Hankinson considers specifically Galen’s causal system: ‘Galen and the Best of All Possible Worlds’, *CQ* 39:i [1989] 206–27; with specific reference to soul-accounts: ‘Actions and Passions: Affection, Emotion, and Moral Self-management in Galen’s Philosophical Psychology’, in *Passions and Perceptions: Studies in Hellenistic Philosophy of Mind: Proceedings of the Fifth Symposium Hellenisticum*, ed. J. Brunschwig and M. C. Nussbaum [Cambridge, 1992], and especially in ‘Galen’s Theory of Causation’, *ANRW* II.37.2 (1994) 1757–74; but not in terms which are closely tied to Galen’s different levels of physical analysis which will concern us in this paper. The last article mentioned, in particular, addresses the formal logical categories of causes, not the functioning of Galen’s causal system as it were in *practice*—that is, within the complexity of his own physical and physiological theories.)

²⁰ For example, Nutton in Wiesner, *Aristoteles*, p. 45: ‘[Galen] is, to a great extent, a materialist,

II. THE GALENIC CURRICULUM

There is not space here to embark on a detailed account of the relationship between all the different types of treatise within the Galenic œuvre, nor to hope to solve all the conflicts that may seem to arise from their differing didactic purposes, polemical targets, intellectual interests, or forebears. But I should here give a brief overview of the subject, in order to clarify the problem in general, and in order to provide the necessary background to the specific problem—the relationship of the different levels of physical analysis in Galen—which I have posed.

We should look first at Galen's own classification of his works. Of considerable interest is the division under different headings in *De libris propriis*. This categorization of his own œuvre combines the principles of chronology (to a small extent), theme (mainly), and author with whom a work is chiefly concerned.²¹ It is thus a categorization which accords to a considerable degree with the differences across the Corpus that we have already identified. But there is another criterion of classification which will interest us more specifically here; again it is to an extent Galen's own criterion, and again it emerges from the listings of *De libris propriis*, but perhaps even more clearly from the other account of his own writings, *De ordine librorum*, as well as from a number of cross-references that occur between one Galenic text and another.

For Galen's works can very loosely be characterized as varying on a scale from the logically abstract to the therapeutically precise. At one extreme, there are works of logic that Galen actually admits are unnecessary for the aspiring doctor;²² after that the basic principle is that logic underlies natural science or *phusikē*, which in turn underlies the more specific science of the body, which in turn underlies the more practical nosological and therapeutic arts. And so Galen's works can be placed in a sort of curriculum, a correct order in which they should be read by the student, following this notion of the relationship of scientific enquiries. This order is given, in

and for all practical purposes, he sees the soul entirely as the servant of the body. Yet he is also a dualist Actually, one must admit a qualification even to such an apparently uncontentious balancing of the issue as that: Galen does recognize a specifically *practical* sense in which the soul is not the servant of the body, in the dietetic context where exercises are prescribed for both body and soul, and the influence of the latter may at times predominate. See *De parvae pilae exercitio* (trans Singer, in Galen: *Collected Works*) 1–2, esp. K V 900: οὐδ' ἔστιν οὐδέν οὕτως ἰσχυρόν τῶν κατὰ τὸ σῶμα παθημάτων, ὥς κρατεῖν τῶν περὶ τὴν ψυχὴν; and cf. *De sanitate tuenda* I.8, K VI 40, on the importance of exercising the soul so that its affections (such as anger and fear) do not cause illness in the body. (On the extent to which there is an independent domain of the 'mental', especially in Galen's theory of health and in his psychopathology, see L. Garcia Ballester, 'Soul and Body, Disease of the Soul and Disease of the Body in Galen's Medical Thought', in Manuli and Vegetti, *Le opere psicologiche*; id., 'On the Origins of the "Six Non-Natural Things" in Galen', in J. Kollesch and D. Nickel [edd.], *Galen und das hellenistische Erbe: Verhandlungen des IV. Internationalen Galen-Symposiums* [Stuttgart, 1993] and ch. 5 of my 'Galen on the Soul'.)

²¹ *De libris propriis* (ed. I Müller in vol. II of *Scripta Minora*, trans. Singer, in Galen: *Selected Works*); chronology: chs 1 and 2; theme: chs 3–5, and also 10 and 12, though with the latter there are clear relations with specific authors too; author: chs 6–10, 13–17. (Note that the three categories are overlapping ones: there is repetition of the titles of treatises.) See now J. Mansfeld, *Prolegomena: Questions to be Settled Before the Study of an Author, or a Text* (Leiden and New York, 1994), esp. chs 4 ('Galen's Autobiography and Hippocratic Commentaries') and 5 ('Galen on Exegesis and on Teachers and Pupils'), pp. 117–76, for discussion of Galen's account of his own works, emphasizing the didactic context. Also relevant is V. Boudon, 'Les œuvres de Galien pour les débutants ("De sectis", "De pulsibus ad tirones", "De ossibus ad tirones", "Ad Glauconem de methodo medendi" et "Ars medica")': médecine et pédagogie au II^e s. ap. J.-C.', *ANRW* II.37.2 (1994) 1421–67.

²² *De ordine librorum* 4, K XIX 58–9.

somewhat varying form, in Galen's *De libris propriis* and *De ordine librorum*. The boundaries between different topics are not rigid, and the lines on the flowchart can be drawn in different ways, as various cross-references within the works themselves indicate,²³ but as a very broad outline this account should not be found misleading. It remains, however, a very broad outline. In the process of going from the far left to the far right on our notional chart, Galen covers a wide range of different areas, traditionally the provinces of philosophers and doctors, and of different kinds of philosophers and doctors; and he uses a wealth of different intellectual tools. We have syllogistic logic, and a system of Aristotelian-style logical distinctions organizing anatomy and nosology; we have the analysis of the body in terms of humours and qualities; we have the explanation of vital function in terms of *pneuma*, respiration, and innate heat (and the related works of pulse-lore); we have a detailed schematization of fevers and other disease entities—and all this before we even consider the specialist tracts on drugs or on diet, or the commentaries on Hippocratic treatises, which base themselves on the material presented in each case.

III. FOLLOWING AND CONSEQUENCE

Of course, the plethora of medical theories is not as chaotic as that overview makes it sound, although it is by no means easy to untangle them all and clarify their precise interrelationship. Scholarship has, in fact, made little advance towards that clarification, tending to concentrate on individual philosophical issues as they appear throughout Galen's work, rather than on the relationship between different *areas* of his thought. Thus, scholars have researched Galen's 'psychology',²⁴ for example, or his view of scientific method;²⁵ but have scarcely analysed the relationship between, say, fever-theory and humoral theory, or that between accounts in terms of faculties and those in terms of mixtures.²⁶ Such analysis is extraordinarily difficult, involving as it does the simultaneous consideration of a huge number of long and intricate texts. There is, though, one particular area where I do wish to explore the exact relationship between the different treatises.

²³ On the cross-references see further below.

²⁴ Considerable attention has been paid to the shifting manifestations of Galen's soul-theory in different treatises, but this is not quite the same as investigating the relationship between different areas of Galenic thought. (See P. Moraux, *Der Aristotelismus bei den Griechen*, vol. II [Berlin and New York, 1984], pp. 778–80 [a developmental analysis, on which further below]; J. Kollesch, 'Anschauungen von den ἀρχαί in der *Ars Medica* und die Seelenlehre Galens', in Manuli and Vegetti, *Le opere psicologiche* [on the difficulties of reconciling the doctrines of one 'Galenic' treatise with Galen's soul-theory elsewhere]; most recently, my 'Galen on the Soul', esp. ch. 3.) The closest approaches to the question we are here considering are by Manuli ('La passione nel *De placitis*' who identifies the interference of different *models* of the soul present in the use of the term *θυμός* (cf. n. 9 above) and by M. Vegetti ('I nervi dell' anima', in Kollesch and Nickel [edd.]), *Galen und das hellenistische Erbe*, who distinguishes a 'mechanical' and a 'pneumatic' system in Galen's accounts of psycho-physiological activities, related to different technological models. The subject of soul-theory in relation to physical theory is clearly of considerable relevance to the analysis of Galen's physical/biological theory, though it is beyond our scope now to address it head-on. For present purposes, soul-accounts may be regarded as constituting just another level of physical analysis, with the same attendant problems of transition as between other physical levels.

²⁵ See the bibliography cited in n. 19 above.

²⁶ Georg Harig, *Bestimmung der Intensität im medizinischen System Galens: ein Beitrag zur theoretischen Pharmakologie, Nosologie und Therapie in der Galenischen Medizin* (Berlin, 1974), is in a sense an exception, investigating the relationship between the humoral theory underlying Galen's pharmacological works and that which appears in the works of physical theory proper.

Within the curriculum or succession of types of analysis outlined above, certain works are described as *consequent on* others: the terms *ἐφεξῆς* and *ἐπεσθαι* are regularly used to characterize this relationship.²⁷ It is, however, a relationship of which Galen gives us tantalizingly little explanation. On one reading, the ‘consequence’ or ‘succession’ is simply one of treatises, and refers to the order in the curriculum which we have just discussed.²⁸ But is there more to it than that?

Apart from *De ordine librorum*, a number of passages in the Corpus offer ‘successions’ of treatises in the above sense. According to the scheme that emerges from *De sanitate tuenda*, *De elementis secundum Hippocratem* should be read before both *De optima constitutione* and *De bono habitu*, which in turn lead to *De sanitate tuenda* itself. Alternatively, as suggested in *De methodo medendi*,²⁹ *De elementis* and *De temperamentis* may be used as the basis of the theoretical works on nosology as opposed to hygienic (= dietetics); on this scheme *De naturalibus facultatibus* (the central work on specifically physiological faculties) and *De usu partium* (the magnum opus on anatomical analysis and physiological purpose of each part of the body) follow *De temperamentis*, and are themselves followed by the more specifically *clinical* works, *De differentiis morborum* and *De differentiis symptomatum*.³⁰

²⁷ For example, *De ordine librorum* 2, K XIX 56: *De temperamentis* ‘follows’ (*ἐπεται*) *De placitis Hippocratis et Platonis*, which is in turn followed by *De simplicibus medicamentis*.

²⁸ Different starting-points (*ἀρχαί* . . . *τῆς ἀναγνώσεως*) are suggested for different kinds of people: those who are *φύσει συνετοί καὶ ἀληθείας ἐταίροι* will want to start with *De demonstratione*; but others too will be able to gain instruction from his other works (*De ordine librorum* 1–2, K XIX 53–4). The distinction is the Platonic one that the latter will have only *δόξαν ὁρθήν*, not *ἐπιστήμην ἀκριβή*, of the subjects.

²⁹ II.6 (K X 122): *χρή τοίνυν, ὅστις τὰς τούτων ἀποδείξεις ἐπιστήμῃ βούλεται περιλαβεῖν, ἀπὸ τοῦ περὶ τῶν στοιχείων ἀρξασθαι λόγου, κάπειθ’ ἐξῆς ἕκαστον ἀναλέεσθαι τῶν ἄλλων, ὡς εἴρηται καὶ πρόσθεν. ἔστι δ’ ἐφεξῆς μὲν ἐκείνῳ τὰ περὶ κρᾶσεων ὑπομνήματα, καὶ τούτων ἐφεξῆς τὸ περὶ τῆς ἀνωμάλου δυσκрасίας. εἴτα τὰ περὶ τῶν φυσικῶν δυνάμεων, ὅσα τ’ ἄλλα περὶ τῶν ψυχικῶν εἴρηται παθῶν ἐφεξῆς ἐκάστης ἰδίᾳ. τοῖσι δ’ ἐπεται τὰ περὶ χρεῖας μορίων* [note that up to this point the order is very similar to that of *De ordine librorum*], *οἷς τὰ περὶ τῶν νοσήμων τε καὶ συμπτωμάτων διαφορᾶς*. (Cf. the list at *ibid.* I.2, K X 15, which adds *De optima constitutione* but omits the works on the soul.)

³⁰ In this context one must also consider the more elaborate curriculum proposed in the *Ars medica* (trans Singer, in *Galen: Selected Works*). (Doubt has been cast on the authenticity of this work [by Kollesch, ‘Anschauungen von den ἀρχαί’]; I am not ultimately convinced by her arguments, though this is not the place to go into them. The work is acknowledged at least to contain Galenic material, though it is not in any case central to my argument here. For what it is worth, though, the passage in question does seem to accord with Galen’s general principles of ordering his own works, while adding some interesting details with respect to the other lists.) At *Ars medica* 37 (K I 407–12) some of the more abstract works are proposed to begin with (*Ad Patrophilum*, preceded by two on the ‘composition of arts’ [perhaps *Protrepticus* and *Thasybulus*]); then the same central scheme as above, with *De elementis* succeeded by (*ἐξῆς δ’ αὐτῷ*) *De temperamentis* and *De inaequali intemperie* following (*ἐπόμενον*) the first two books of *De temperamentis* (and the additional suggestion that book III of *De temperamentis* is important for the understanding of the pharmacological works); then also *De optima constitutione* and *De bono habitu*; and *De naturalibus facultatibus* read either after book II of *De temperamentis* or after *De elementis*. The works on psychological faculties come after these; but for this purpose works on anatomy, as well as works *ἐνεργείας ἀποδεικνύντα*, are useful, and a substantial list is given of these—*οἷς ἅπασιν* . . . *ἐπεται De usu partium*. We then get a curriculum of treatises on diagnosis and prognosis. More useful than any other for therapeutic method is *De differentiis morborum*, as well as *De differentiis symptomatum* and thirdly *De causis morborum*; *ἐφ’ οἷς* three more: *De causis symptomatum*, *De simplicibus medicamentis* (also mentioned above) and *De compositione medicamentorum*, which are followed by *De methodo medendi* and *De sanitate tuenda*. But before all this one must be schooled in the logical method, as was shown in *De optima secta*.

On one level this amounts to no more than a set of suggestions for a sensible order in which to read Galen's works. But it is not *just*, it seems, a chronological progression of study on the part of the student that is envisaged. There is also—and relatedly—an intrinsic logical connection between different kinds of subject matter or analysis: a sense in which succeeding *topics* in the curriculum are consequent upon each other. And this is reflected in another usage of the terms 'consequence' and 'following'—one which will be of significance to us in another context below—according to which they refer not to an order of texts but to a logical sequence of phenomena in the natural world. For example, the treatise *De elementis secundum Hippocratem* gives the basics of the theory of elements; it is the *subject-matter* of *De temperamentis* (explaining how this element-theory functions in physiological contexts, thus accounting for different human constitutions, and for physiognomics) that is described as 'consequent on that'.³¹ On the basis of *De temperamentis*, in turn, we can establish what the best state of the body is, and this is done in *De optima constitutione*—which is itself referred to at the beginning of the great work of dietetics, *De sanitate tuenda*, as laying down the basis for the present enquiry.³²

Here one should examine the exact words in which Galen justifies the order of treatises in the passage from *De methodo medendi* already cited (n. 29 above). It is if one wishes to grasp the demonstrations of these matters with scientific understanding (*ἐπιστήμη*) that one should start from *De elementis*, and then read all the other works in stated order. The order of reading is thus clearly linked with an order of logical consequence which begins from logical fundamentals—the only kind of beginning that may lead to *ἐπιστήμη*. (This is, of course, linked to Galen's view of the nature of true knowledge and proof as most clearly outlined in *De placitis Hippocratis et Platonis*, with its gradation of types of syllogism.³³)

We shall return to the language of 'following' in due course. Next let us note that these practical differences in the level at which a treatise functions—at what point it should be read—may in turn be related to a theoretical account that Galen himself gives of the relationship of different levels of physical analysis, for example in *Ad Patrophilum de constitutione artis medicae* and in *De differentiis morborum*. In these works, a breakdown is given of the different levels of analysis of the human body. In contemporary jargon, we might say that the different levels correspond to 'lower-' and 'higher-level' physical events.

Ad Patrophilum, first of all, gives a twofold distinction, between activities of 'simple and homoiomerous' parts, and activities of 'organic' parts.³⁴ The relationship is explained as follows: one homoiomerous body comes about from the four elements in mixture; and in the same way, individually, in both categories, all differences follow the difference of mixture.³⁵ Furthermore, the particularity of each species is in the particularity of the mixture.³⁶ Recapitulating the argument a little later, Galen states

³¹ ἐφεξῆς ἐκείνω, K I 509.

³² In the context of the definition of the subject of *De sanitate tuenda*, health: γέγραπται δὲ ἡμῖν ἐτέρωθι περὶ τοῦδε, καὶ δέδεικται τῶν μὲν ὁμοιομερῶν ὀνομαζομένων ἢ ὑγεία, θερμοῦ καὶ ψυχροῦ καὶ ὑγροῦ καὶ ξηροῦ συμμετρία τις ὑπάρχουσα, τῶν δὲ ὀργανικῶν ἐκ τῆς τῶν ὁμοιομερῶν συνθέσεως τε καὶ ποσότητος καὶ πηλικότητος καὶ διαπλάσεως ἀποτελουμένη, I.1, K VI 2. Cf. I.2, K VI 3; I.4, K VI 12–13. ³³ Cf. n. 28 above.

³⁴ K I 232–5. See D. E. Dean-Jones, 'Galen "On the Constitution of the Art of Medicine": Introduction, Translation, and Commentary' (Diss. Texas, 1993), esp. pp. 36–7 for a full account of the slight variations in formulation of this distinction.

³⁵ ὡσαύτως δὲ καὶ κατὰ μέρος ἐν ἑκατέρῳ τῷ γένει διαφοραὶ πᾶσαι τῇ τῆς κράσεως ἔπονται διαφορᾷ, ch. 9, K I 254.

³⁶ ἀλλὰ καὶ ἡ καθέκαστον αὐτῶν ιδιότης ἐν τῇ τῆς κράσεως ἔστιν ιδιότητι, *ibid.* K I 255.

that the substance of the organic parts is 'from' the simple (i.e. homoiomerous) bodies in them, while that of the simple bodies is from the four elements.³⁷ In the rest of the work, then, the other distinctions will follow from these.

De differentiis morborum presents the distinction of levels in slightly different terms, describing 'composition and construction' as 'threefold'. The three levels are those of the homoiomerous, the organic, and the whole body. The underlying conceptual scheme is, however, identical: each organic part is composed of other, simple ones, and each of these is composed of the first elements.³⁸

Now, the first important point to make here is that there is a strong emphasis on events at the higher levels having their full explanation at the lowest of all three levels—the humoral. Higher-level descriptions—those involving the organs, or the whole body, can, at least in theory, be 'broken down' into lower-level ones, in particular, that of the 'homoiomerous' substances such as blood, bone, or flesh; that of the homoiomerous can in turn be broken down into that of the four elements. This is stated clearly in *De differentiis morborum*, in the context of pathology: illnesses at, say, the organic level can all be fully accounted for in terms of affections of the humours. Galen's leaning is apparently towards the view that physiological phenomena are fully determined by low-level physical events.

Now, the two treatises mentioned are intended to give a foundational account which will be of use as we proceed to more detailed studies of actual illnesses. But we should digress here for a moment to note what happens when we turn to those latter studies. As the treatises go into more detail on the typology of illnesses, they tend rather to forget the foundational account and the relationship to it in which they were supposed to stand. We thus never actually learn *how* the fundamental-level account is related to the more medically technical ones, or how the latter could have been, say, equally well explained in terms of the former.

This last claim requires some justification; so, since the point is one of crucial importance to our argument, let us pause to consider the matter in more detail. There are two aspects to the claim: (i) that, within a treatise, there are theoretical statements of the relations between different levels of analysis, and that the implications of these theoretical statements are not followed up in any detail; (ii) that different treatises cover different theoretical disciplines—e.g. humour theory, natural faculties, respiration, fever classification—and that we lack an account in precise physical terms of how these different theoretical disciplines are related to each other. Thus, though we know in general terms that all higher-level diseases are fully explicable in terms of the physics of constituent parts, we are never given a full and clear account of what, for example, is the low-level physical correlate of a quartan fever—to what precise imbalance of the elements in the body it would correspond.

Consider the claims made at the outset of *De differentiis morborum*. We are led to expect an analysis which will locate each individual illness at its precise place in an Aristotelian-style scheme of definitional subdivision which started from the most basic distinctions of diseases into types. But in the course of the treatise we never arrive at that detailed analysis; we are left with the broad theoretical framework alone. *De differentiis morborum* never gets as far as to consider the peculiarities of individual fevers or haemorrhages; such works as *Ad Glauconem* or *De locis affectis*, which do

³⁷ τοῖς ὀργανικοῖς μορίοις ἐκ συνθέσεως ἐστὶ τῶν ἐν αὐτοῖς ἀπλῶν ἢ οὐσία, τοῖς δ' ἀπλοῖς ἐκ τῶν τεσσάρων στοιχείων, *ibid.* K I 258. The language of 'being composed from' (ἐκ συνθέσεως or simply ἐκ), like the language of 'consisting in' (cf. n. 36 above) might already lead one to believe that the nature of the causal relationship is less than entirely certain.

³⁸ Ch. 3, K VI 841.

consider diseases in specific, clinical terms, no longer have sight of the foundational account of the former works. Consider, too, the way in which references forward and backward between treatises give one to understand that the theoretical implications or theoretical underpinnings of the doctrines under discussion are to be found elsewhere. Galen is certainly interested in presenting the medical art as a single, extraordinarily articulated body of knowledge; but it is precisely in the joints that the philosophical unclarity arises.

Now, it is true that *some* theoretical account is given of these transitions from one level to another; it is just that such accounts are not sufficient to constitute an adequate answer to our question. Take, for instance, the account of the relation of the illness inflammation (φλεγμονή) to the humoral level in *De inaequali intemperie*. Here it is stated that there are manifold ἀλλοιώσεις in φλεγμοναί, since the bodies have many different constitutions.

πρώτον μὲν γὰρ ὁ τὴν φλεγμονὴν ἐργαζόμενος χυμὸς ἢ μᾶλλον ἢ ἥττον ἐστὶν θερμὸς· ἐφεξῆς δὲ σήψις αὐτοῦ κατὰ τὴν οἰκείαν ἀπαντᾷ φύσιν· οὐχ ἥκιστα δὲ καὶ παρὰ τὸ μᾶλλον τε καὶ ἥττον ἐσφηνώσθαι (ch. 4, K VII 741)

Here the causative features of illness are related to an account in terms of the fundamental qualities—in particular, hot and cold—but in a way which falls some way short of a full description of the exact state of the humours to which a φλεγμονή would correspond. There is material in *De differentiis febrium*,³⁹ too, relevant to the relation of heat in the body to fever. Again, this does not amount to a full explanation of how fever-descriptions might correspond to causal accounts in terms of activities of the four elements in mixture. In *De causis morborum*, furthermore, there are various causes of heating, which will be of explanatory value in accounting for diseases at a ‘higher’ level; but these causes are not themselves unpacked in elemental terms. Chapter 2 of that work introduces an account of the diseases so far mentioned, and their causes are for example ἐκ σηπεδόνοσ, ἢ ἐξ ὀμιλίας ἐτέρου θερμοτέρου σώματος ἢ ἐκ στεγνώσεως.⁴⁰

Let us, then, return to our central argument. There are different levels of analysis within Galen’s physical theory; and these are in some way consequent upon each other. But what exact logical relationship is implied by this ‘consequence’? In modern philosophical terms we might say that the possibilities range from low-level physical determinism to ‘emergentism’, in which higher levels of description cannot, even in theory, be reduced to lower ones, because there are actual physical realities about the higher levels that are not included in accounts of the lower ones. We might also wish to consider the equivalent of the position which in the debate over free will versus determinism is known as ‘compatibilism’, where there may coexist two analyses of the same event which are both valid but of wholly different kinds, so that the one description may not be reduced accurately to the terms of the other.

Now, we have seen evidence in favour of the interpretation of low-level determinism. Such an interpretation, however, would seem at first blush to fly in the face of the analysis that *De usu partium* gives of events in the body taking place ‘for the sake of’ a physiological purpose or function, and ultimately ‘for the sake of’ the purpose of an organism, a purpose which is expressed in terms of the nature of that organism’s soul.⁴¹ (We shall return to the problem of *De usu partium* in due course; for

³⁹ I.1, K VII 275–7 (see also I.3, K VII 281); an account of the three basic types of heat related to the heart; I.4, K VII 283: innate heat is given as the source of one particular kind of fever.

⁴⁰ Ch. 2, K VII 2–3.

⁴¹ Whether the teleological analysis *is* in conflict with low-level physical determinism is a

the moment let us note that at least some of the statements made in the context of that teleological account seem almost to imply the independent existence of souls.⁴²) Moreover, as we seek to investigate the matter more closely—and looking at the terms Galen himself uses for this relation—we again come upon what looks like Galenic vagueness. There are specific statements on the relationship between the levels of physical analysis; these are couched in the language of ‘following’ which we have already discussed in a different context: ἀκολουθία, ἔπασθαι. The differences at the level of bodily activities or functions ‘follow’ those at the level of elemental mixture;⁴³ and, as is well known, ‘the faculties of the soul “follow” the mixtures of the body’, in a treatise that actually bears that title (*Quod animi mores corporis temperamenta sequantur*). But such language of ‘following’ is notoriously difficult to pin down. Geoffrey Lloyd has shown, for example, how difficult it is in *Quod animi mores* itself.⁴⁴ At its strongest, ‘X follows Y’ seems equivalent to the statement, ‘X is fully determined by Y’; but, as Lloyd demonstrates, it is frequently not at its strongest. Some of the arguments which *Quod animi mores* adduces in support of its thesis of ‘following’ are arguments which establish no more than some kind of causal dependence, certainly not that ‘fully-determined-by’ relation.⁴⁵ It is true that the *clearest* statement that *Quod animi mores* makes on the subject seems to be one of unambiguous low-level determinism⁴⁶ (though Galen seems in a way unhappy with this conclusion, and links

question which has given rise to much debate, especially in the context of discussions of Aristotle’s biology and soul-theory. See esp. M. C. Nussbaum, *Aristotle’s De motu animalium* (Princeton, 1978); the relevant essays in A. Gotthelf and J. G. Lennox (edd.), *Philosophical Issues in Aristotle’s Biology* (Cambridge, 1987); and M. C. Nussbaum and A. O. Rorty (edd.), *Essays on Aristotle’s De Anima* (Oxford, 1992), esp. M. F. Burnyeat, ‘Is an Aristotelian Philosophy of Mind Still Credible? A Draft’ and M. C. Nussbaum and H. Putnam, ‘Changing Aristotle’s Mind’. Our question here is somehow parallel to that at issue between the interpreters of Aristotle as a ‘functionalist’ (which involves a compatibilism between his material and formal or teleological accounts) and those who point to the radically alien nature of Aristotelian physical conceptions as an obstacle to incorporation of Aristotelian philosophy of mind within modern terminology. Which is not to say that to answer such a question for Aristotle is the same as to answer our question for Galen. But certainly Burnyeatian strictures as to the limits to the explanatory power of Aristotelian matter seem of central relevance to our conclusions in Galen’s case.

⁴² The body is the instrument of the soul in *De usu partium*, and the usefulness of each part of the body is to be explained in terms of this relation (esp. I.2–3, K III 2–7). It is true that the statements there do not actually entail independent existence of souls, only causal priority; and indeed *De usu partium* is consistent with other of Galen’s works in professing agnosticism on the definition of the soul in its own right (VII.8, K III 542; this very hedging of the subject may be seen to fit with the conclusion of indeterminacy for Galen’s system of causal explanations arrived at below). But Galen does say later in *De usu partium*—in the summing-up in book XVII of his argument from design—that ‘an intelligence endowed with wondrous power is present on earth and pervades all the parts’, and that this intelligence ‘arrives from the bodies above’, the fact that such intelligence as Plato’s or Hipparchus’ can come about in the mire of physical substances that is this earth, and that νοῦς inhabits the filth of flesh and juices, providing testimony to the far greater intelligence of the heavenly bodies (XVII.1, K IV 358–60). It is true, still, that the independent existence or survival of individual *human* souls is not entailed; nevertheless the relation of intelligence and matter seems far from that of *De temperamenti* or *Quod animi mores*.

⁴³ *De sanitate tuenda* I, K VI 15: αἱ διαφοραὶ τῶν ἐνεργείων ταῖς τῶν κράσεων διαφοραῖς ἀκολουθοῦσιν.

⁴⁴ G. E. R. Lloyd, ‘Scholarship, Authority and Argument in Galen’s *Quod animi mores*’, in Manuli and Vegetti (edd.), *Le opere psicologiche di Galeno*.

⁴⁵ For example, those regarding the effects of diet and nurture as expounded in Plato’s *Timaeus* and *Laws* (QAM 9–10, K IV 806–14).

⁴⁶ See Hankinson, ‘Actions and Passions’, for a strong statement of this interpretation. Arguing against the interpretation of Lloyd (‘Scholarship, Authority and Argument’), he says (p. 218, n. 99): ‘[Galen’s] position is compatible with the hardest determinism you care to espouse,

it to a fascinating, if frustratingly schematic, account of why such determinism is compatible with the making of moral judgements). But in view of the unique status of such statements to *Quod animi mores*—whether such uniqueness is due to the treatise's lateness or to its peculiar intellectual and polemical concerns⁴⁷—we cannot regard this as Galen's definitive, certainly not as his only, answer to the question.

IV. THE DIVINER CAUSE

The tendency of modern scholarship when faced with such apparent differences of philosophical account as one finds in Galen is to attempt a reconciliation within a single theory. And its tendency when faced with problems arising from the apparent conflict between materialist and teleological explanations is to demonstrate how the two can function alongside each other, representing the same physical events under a different aspect. The interpretative complexity of the former undertaking, as well as the philosophical sophistication required of the latter, is considerable. It will therefore save us considerable trouble if we happen to find evidence that Galen himself did not believe in such reconciliation. (One should also, doubtless, bear in mind the medical as opposed to purely philosophical nature of Galen's enterprise, and consider the possible parallel with a modern doctor who firmly believes—at some abstract level—in the reducibility of all mental states to neurological ones, but is very far from being able to provide any such concrete physical explanation in an individual case. Again, though, we will not need to resort to this style of explanation if Galen himself doubts such reducibility, *even in theory*.)

There is, then, a problem for the characterization of Galen as a low-level determinist, a problem arising from the insufficiently clear nature of the 'following' and 'consequence' of which he speaks. But it is not just Galenic vagueness or indeterminacy which speak against the interpretation. For in fact Galen gives us an explicit suggestion of a philosophical alternative.

We saw above that *De temperamentis* is regarded, in the 'curricular' accounts and in cross-references, as having a particular status in physical analysis, between element-theory proper and physiology. It is, as it were, rising on the path from lower to higher,

and his motivation in this passage is precisely to show that whatever view one takes of causal determination, you [*sic*] can still rescue a notion of responsibility that will do the work you require of it in forensic and moral contexts.' Cf. *ibid.* p. 221, n. 103, where Hankinson defends the position that Galen is a 'materialist', but only (at this point in his argument) on the evidence of *Quod animi mores*. Against this it should be pointed out that the position of that work itself is not univocal, especially in the matter of soul-*krasis* identity statements. At *Quod animi mores* 4, K IV 782, for example, we have the doctrine that 'the mortal part of the soul' is identical to the mixture of the body, not the full-blown identity suggested elsewhere. Hankinson's summing-up after his reconstruction of Galen's position is in a way a summing-up of the problems for such reconstructions: 'Whether Galen ever really espoused that picture in its full generality is unclear. That he is committed to it seems obvious enough on the evidence I have presented' (p. 222). The question for the seasoned Galenist is, rather, precisely that of whether Galen is committed to the full generality of a picture he espouses.

⁴⁷ The treatise has as a specific polemical target those Platonists who do not accept *any* talk of the body's influence on the soul, at least in healthy states, and it may be adopting a particularly extreme stance in the context of this rhetoric (*QAM* 9, K IV 805: ἀλλὰ διὰ τινος τῶν Πλατωνικῶν μὲν ἑαυτοὺς ὀνομαζόντων κτλ.). As to lateness, see my argument below on developmental accounts. (On the chronology of Galen's works in general, the fundamental account is that of J. Ilberg, 'Über die Schriftstellerei des Klaudios Galenos', *Rheinisches Museum* 44 [1889] 207–39; 47 [1892] 489–514; 51 [1896] 165–96; 52 [1897] 591–623; to be considered in conjunction with K. Bardong, 'Beiträge zur Hippokrates- und Galenforschung', *Nachrichten von der Akademie der Wissenschaften in Göttingen, Phil.-hist. Klasse* [Jahrgang 1942] 577–640.)

from *De elementis secundum Hippocratem* to *De naturalibus facultatibus*. Now, the kinds of account *De temperamentis* gives of the relationship of humoral mixture and character might themselves be the topic of useful discussion. In contrast to the *De-usu-partium*-style analysis, where it is clear that whatever physical characteristics animals, or by extension their parts, have is to be explained causally by their purpose or structure, *De temperamentis* seems, while generally sharing the same style of explanation as *De usu partium*, at least sometimes to reverse the situation. Bravery is explained as *because of* heat in the chest.⁴⁸

But I wish to draw attention, not to any ‘physicalist’ style of analysis of *De temperamentis* in general, but to a specific passage—one which is fascinating precisely because, in the middle of an analysis in low-level physical terms, it invokes a different possibility altogether. Galen is considering the optimal state of a man’s body. The discussion of this has so far been in terms of the fundamental qualities, i.e. of optimal mixture. At a certain point he adds a further desideratum: optimal *διάπλασις*. In addition to the best mixture of the body, we are also interested in the best ‘shaping’ or ‘construction’. We are, in other words, considering a different level of physical explanation. The passage runs as follows:

ἐστὶ μὲν οὖν ἐπὶ πλεόν, ὃν νῦν ἡμεῖς ζητοῦμεν, ἢ ὁ κανὼν οὗτος. οὐ μόνον γὰρ ὑγρότητός τε καὶ ξηρότητος ἐν τῷ μέσῳ καθέστηκεν ὁ οὕτως εὖσαρκος ἄνθρωπος, ἀλλὰ καὶ διαπλάσεως ἀρίστης τετυχηκεν, ἵσως μὲν ἐπομένης τῇ τῶν τεττάρων στοιχείων ἐκκρασίᾳ, τάχα δέ τινα θειοτέραν ἀρχὴν ἔχουσης ἄνωθεν. (I.8, K I 567)

It may be that *διάπλασις* follows the balance of the four elements, or it may have a diviner cause of some sort from above. It is an either–or question, not a matter of compatible accounts. Here it is clearly—but not conclusively—stated that the low-level physical phenomena may not be sufficient to account for all biological events.⁴⁹ And we note, too, that the difficulty is encountered at the level of *διάπλασις*: any level lower than that can be explained without embarrassment in terms of fundamental qualities and their consequences; it is only at the level of *διάπλασις* that a ‘higher power’ may need to be invoked. The same language recurs later in *De temperamentis*, this time explicitly in the context of an interpretation of Aristotle. Regarding the ‘constructing force in nature’ Aristotle, says Galen,

ἡπόρησε, μή ποτ’ ἄρα θειοτέρας τινὸς ἀρχῆς εἴη καὶ οὐ κατὰ τὸ θερμὸν καὶ ψυχρὸν καὶ ξηρὸν καὶ ὑγρόν. (II.6, K I 636)

There, at any rate, is a *Galenic* view on the compatibility of higher- and lower-level Aristotelian causative accounts. Aristotle was in doubt as to whether he should not invoke a diviner cause, *rather than* one in terms of hot, cold, dry, and wet. In other words, the two kinds of account are in conflict: in this case at least, you have either high- or low-level causation. No neo-Aristotelian sophistication here. In the same passage he goes on explicitly to place his own vote with those who see the power

⁴⁸ *De temperamentis* II.6, K I 625: ἐν τῇ καρδίᾳ τὸ θερμὸν εἶναι πλείστον, διὸ καὶ θυμικόν. It should, however, be borne in mind in this context that Aristotle himself sometimes expresses himself in similar terms in his biological works, and that some would argue that such verbal formulations are not of great philosophical importance. See n. 41 above on the arguable ‘compatibility’ of Aristotelian teleological and material accounts.

⁴⁹ We note in passing that the other possibility mentioned—the first of the alternatives—at least *seems* to imply a particular interpretation of *ἐπεσθαι*, namely that of complete determination: only two possibilities are mentioned, that of following and that of the higher cause; so it would seem to be a consequence that on the former account all relevant causal factors must be included in this ‘following’ of the mixture, and so we would have low-level determinism.

responsible for 'constructing' as separate from the qualities: they are just its instruments.

Διάπλασις, then, corresponds to a level of explanation which Galen doubts the possibility of reducing to a low-level physical account.⁵⁰ This is of particular interest in view of the context in which we find another of Galen's most philosophically interesting attempts to wrestle with problems of causation: *De foetuum formatione—Περὶ κυνουμένου διαπλάσεως*. It is *διάπλασις* here, too, that occasions a philosophical *aporia*. For in this text it is the status of *what causes* *διάπλασις* in the growing embryo that is problematic. Again, it seems to need to be attributed to a sufficiently divine source; but in this case the problem is, reciprocally, that if such a high power is responsible for *διάπλασις*, it then seems wrong—blasphemous even—to identify that power as working in very low-level physical phenomena. In the context of the (Platonist) suggestion that it is the 'soul extended through the whole cosmos' that is responsible for *διάπλασις* of the embryo, Galen finds that the skill and power involved are indeed worthy of such a source, but that it is 'close to irreverence' to imagine that entity responsible for the construction of scorpions and other such vermin.⁵¹ The underlying problematic, though, is the same: a rift is felt between low and high levels in biological phenomena.⁵²

If we now look again at the treatises that were cited above as showing an inclination to low-level determinism, we see that they too contain hints at least of a position which is not incompatible with this 'rift' intuition. Above we saw that in passages which enunciate the twofold analysis (homoiomeric and organic), the higher, organic level in some way arises from the lower. But we have paid insufficient attention to the precise wording of such passages. Let us look again at *Ad Patrophilum*.

τοῖς ὀργανικοῖς μορίοις ἐκ συνθέσεως ἐστὶ τῶν ἐν αὐτοῖς ἀπλῶν ἢ οὐσία, τοῖς δ' ἀπλοῖς ἐκ τῶν τεσσάρων στοιχείων (ch. 9, K I 258)

The substance of the organic parts is *composed* from the simple parts that are in them. But what is the nature of this *synthesis*? In fact the passage should be read in conjunction with another text which directly addresses the question of levels. In *De optima constitutione*⁵³ Galen poses the question in the following form:

Is (A) the best state of the body [identical to] that with the best mixture, or is it the case that (B) while the best state is necessarily that with the best mixture, that with the best mixture is not necessarily the best?

In other words, either (A) best mixture is the necessary and sufficient condition of best state, or (B) best mixture is a necessary condition, but not sufficient. The answer

⁵⁰ We may compare also *De naturalibus facultatibus* I.5–6, K II 10–11, where there is a dichotomy between the transformation of the underlying *οὐσία* to bring about such substances as bone and nerve, and the *διάπλασις* of the thus transformed *οὐσία* to give it the right shape, position, etc.

⁵¹ *De foetuum formatione* (trans. Singer, in *Galen: Selected Works*) 6, K IV 700–1.

⁵² This intuition of a 'rift' can be related to Platonism and in particular to Middle Platonism; see P. Donini's (somewhat involved) account of the philosophical problems of *De foetuum formatione* in relation to other works of Galen: 'Motivi filosofici in Galeno', *Parola del passato* 35, fasc. 94 (1980) 333–70 and, on Middle Platonism more generally, id. *Le scuole, l'anima, l'impero: la filosofia antica da Antioco a Plotino* (Turin, 1982) and J. M. Dillon, *The Golden Chain: Studies in the Development of Platonism and Christianity* (Hampshire and Brookfield, VT, 1990).

⁵³ I, K IV 734. For this text see R. J. Penella and T. S. Hall, 'Galen's "On the Best Constitution of our Body": Introduction, Translation and Notes', *BHM* 47 (1973) 282–96 (also trans. in Singer, *Galen: Selected Works*); but the article does not address directly the fundamental question raised by this first sentence of the treatise.

that emerges rests on the distinction of homoiomerous and organic that we have already observed. Health of the homoiomerous parts is the correct mixture of hot, cold, wet and dry, while

ἡ ἐκ τούτων διάπλασις τοῦ ζώου ἐν θέσει καὶ μεγέθει καὶ σχήματι καὶ ἀριθμῷ τῶν συνθέντων ὑπάρχει.

Now, from these words it might remain unclear how strong a causal dependence of the latter on the former Galen intends. As elsewhere, the force of ἐκ is uncertain: the construction of the animal from these [sc. qualities] consists in the position, size, shape, and number of the things composed—but this could be consistent with a strong sense of διάπλασις ‘following’ the mixture of qualities, or with the independent status of διάπλασις which we have already noted. *De optima constitutione* is not a text that explores causal relations to any great philosophical depth; but the summing-up of the question is revealing. In chapter 4 it is asserted that the best state consists in these two things: good mixture of the homoiomerous parts and balance of the organic.⁵⁴ That is, Galen prefers to regard the two separately, rather than to collapse the one into the terms of the other. We should of course do justice to the possibly pragmatic nature of this *opusculum*: in a work on health there are obvious practical reasons for regarding a higher level separately which on a strict causal analysis might be reducible to a lower. Returning to *Ad Patrophilum*, though, we see an underlying consistency: the substance of the simple parts is ‘from the four elements’, that of the organic ‘from composition of the simples in them’.⁵⁵ The parallelism between this passage and that just considered allows us to relate ‘composition’ with διάπλασις; and so *Ad Patrophilum* too emerges as a text which at least raises the question of independent status for the higher level in the analysis. Again, though, it should be noted that Galen does not give anything like a conclusive statement of the position. The briefness of his summations renders certainty impossible. In particular, the precise nature of the causal relation is occluded by verbal formulations in which little words are made to do a great deal of philosophical work. Is ‘the substance of X is from composition of Y’ the same statement as ‘the construction of the animal from Y consists in the place, size, shape, and number of Y’? Is either of these statements compatible with Y representing the sufficient as well as the necessary condition of X?⁵⁶

What seems to emerge from consideration of these passages is that Galen does not give a determinate answer to the question of the relation between levels, but does sense a problem in the notion of ‘bottom-upward’ causation accounting for everything. If this is the case, then it would seem that—in answer to our original question—Galen does not, or does not quite, find teleological accounts of physiological structure to be

⁵⁴ K IV 749.

⁵⁵ See n. 37 above.

⁵⁶ Again (cf. n. 41 above) cautions as to the fundamental differences in ancient conceptions of matter must be of relevance. And these cautions function, as it were, in both directions: it is true both that the purport of such a reductionist statement as that which I have just formulated tends to rely on a notion of simple, lawlike (Newtonian) behaviour on the part of the lowest material level in question, so that to ‘reduce’ a higher level to a lower is to bring it within such a lawlike framework (whereas Galenic elements or qualities are endowed with properties not to be anticipated within such a scheme) and that the ‘composition’ or ‘construction’ that the Galenic elements or homoiomerous undergo in the process of ‘ascending’ levels is something which must be imposed upon that level, i.e. is not a feature of the physics of that level considered on its own. So that in this case the question ‘do events at level Y constitute sufficient conditions of events at level X?’ seems almost to be an ill-formed question: it is the *composition of* (mixture of, construction from) that is the sufficient condition of the higher-level events; but this composition/construction/mixture is precisely what constitutes the higher level.

compatible with low-level physical causation.

V. THE DEVELOPMENTAL ACCOUNT

This conclusion is well worth considering in the light of developmental hypotheses that have been advanced in relation to Galen's philosophy. For, of course, a historical progression in Galen's ideas has been advocated by some scholars in explanation of the same kind of phenomena which I have been describing as evidence of 'indeterminacy'. Moraux's analysis,⁵⁷ for example, saw a progression in the theory of the soul from *De usu partium*, through *De placitis Hippocratis et Platonis* V, through *De temperamentis*, to *Quod animi mores*.

And yet it is among some of these very works that we find passages which we have been considering as manifesting essentially the same attitude to the question under analysis. To be sure, *De usu partium*, which is comparatively early, gives the clearest statement in the Corpus of a teleological account of anatomical and physiological phenomena—a teleological account in which the souls *for the sake of which* such-and-such biological phenomena come about almost seem to pre-exist these biological phenomena. And to be sure, too, that work gives no strong account of the causal effects of elements or humours. *De temperamentis* is less explicit on teleology, and, as mentioned above, manifests a greater tendency to explain soul-events by body-states than the other way around. But, as we have seen above, all these treatises, with the exception of *Quod animi mores* (which, as I have suggested, nevertheless displays some discomfort about it), in some way agree in invoking a 'higher cause', at least as a possibility, to explain certain biological phenomena which are felt to be insufficiently accounted for by using the lowest level of explanation alone.

It may, possibly, be correct to identify a shift of emphasis, towards a greater reliance on low-level causation; but such shifts may equally be a function of the type of work Galen is writing in each case. After all, Galen did not write a second *De usu partium* toward the end of his life; what he says in that work might more sensibly be interpreted as according with the Aristotelian nature of his enterprise—the giving of a teleological explanation of everything in the human body, in his great work on functioning—than of its early date.⁵⁸

There are further arguments against the value of chronological analysis of Galen's work, which may be worth considering here. Moraux presents his developmental analysis as if what was under discussion were a gradual development of thought over a long period of time, from early youth to old age. In fact, though Galen did continue writing up to a great age, we have no treatises from his early youth. The works setting out his major medical and philosophical theories begin in his mid-thirties, a time at

⁵⁷ Moraux, *Aristotelismus*, pp. 778–80. (Ilberg, 'Die Schriftstellerei', incidentally also identified a shift of emphasis over time, but this a broader one, from more scientifically abstract interests to the more practical.)

⁵⁸ Nutton has pointed to the potential importance of *De sententiis*, a work summing up Galen's own philosophical opinions towards the end of his life, for the analysis of Galen's philosophical progression, or at least of his final position (see n. 12 above); but, at the same time, his own summary of that work shows that Galen does not evaluate his own work in terms of a chronological progression, let alone repudiate early works which he might have 'gone beyond'. (Galen's change of mind on the temporal order of development of organs in the foetus, mentioned in ch. X 2–3 of *De sententiis* and attested also at *De foetuum formatione*, K IV 663–4, is an isolated case.) Rather, the different types of analysis which raise the problems under discussion in this paper are mentioned alongside each other, with no consciousness of a conflict. This 'philosophical testament' thus further undermines the value of a developmental analysis.

which we would expect on *a priori* grounds that a thinker's views would be fairly well established, at least in their essential outline. But *a priori* considerations apart, the treatises with which we are actually concerned, and which have been cited as representing different phases in Galen's development, can hardly be regarded as demonstrating a gradual intellectual development. With the exception of *Quod animi mores*, all the works used by Moraux to support his developmental account belong to the years A.D. 162–76.⁵⁹ *De usu partium* belongs to the same period as *De placitis* V, and *De temperamentis* to the same period as *De praesag. ex puls.* Furthermore, *De usu partium* books II–XVII, which manifest a quite consistent position with the first book on the relation between souls and bodies, postdate *De placitis* V (and possibly also *De temperamentis*). Even within these limits, Moraux himself has to admit that his quotation from *De placitis* 'durchaus auf der Linie des späteren, im Traktat *Quod animi mores* ausgearbeiteten Naturalismus steht' (p. 778).

A progression from *De usu partium* (itself composed over a number of years but manifesting a consistent position) to *De temperamentis* is thus not really plausible. To much later years is dated *Quod animi mores*; but to this period too *De foetuum formatione*, which, as we have seen above, is far from displaying the same 'Naturalismus'.⁶⁰

Most crucial, though, against the value of a developmental account is the fact that the shifts occur *within* works. We have pointed to shifting statements in *Quod animi mores*; within *De placitis*, too, problems arise from the transition between affection-based and faculty-based descriptions of the soul. It is also true, conversely, as I believe has emerged from the above consideration of a fairly wide range of texts, that there is an overall coherence, throughout Galen's work, in the problems that trouble him and the kind of incomplete answers he gives to them—what we might term a consistent indeterminacy. The same *aporiai* come to haunt Galen throughout his life (the clearest example is that frequently mentioned by Galen himself, on the substance of the soul); and what emerges from the *Corpus* in response to them is a constant, inquisitive inconclusiveness, rather than a constant progression towards one determinate answer.

VI. CONCLUSION

We have seen that certain works which give the basic principles of disease-classification, like *Ad Patrophilum* and *De differentiis morborum*, do imply that the distinctions made in analysis of the lowest level will account for all distinctions at a higher level. But we also saw that such an ambitious claim is not followed up—we never find out the exact relationship of a quartan fever to such-and-such a humoral mixture, for example—and, further, that those very works also contain hints of an irreducibly higher level, which links the concepts of *σύνθεσις* and *διάπλασις*. We should also note, incidentally, that the distinctions *in diseases* with which *Ad Patrophilum* and *De differentiis morborum* are concerned would not affect *διάπλασις*. Changes in state of the elements, humours and the homoiomerics might all be accounted for in the same low-level manner, and so too might the higher-level *ἑξις* or *διόστασις* of the body as a whole, or the malfunction of a limb or organ. But when

⁵⁹ Cf. Bardong, *Nachrichten*, pp. 633–6: *De usu partium* I, a.d. 162–6; *De placitis* V, A.D. 162–6; *De praesag. ex puls.*, A.D. 169–75.

⁶⁰ Ilberg, 'Die Schriftstellerei', II, p. 513. Note that the statement of the relation of soul faculties to the body at *De foetuum formatione* 3, K IV 674—*σὺν . . . τοῖς ὀργάνοις τελειοῦμεν αἱ τῆς ψυχῆς δυνάμεις ἐνεργοῦσιν*—is quite ambiguous as to causal priority (in spite of a cross-reference here to *Quod animi mores*).

we reach the level of the *διάπλασις*—the actual process by which the body and its organs gain structure—that will require a different order of explanation.

It may be, then, that we have a Galen for whom everything in the biological world can be accounted for by elements and humours except for *διάπλασις*—the structure of the organs within the body, or the process by which that structure is obtained. As I have argued, though, this picture is not a wholly clear or consistent one. Souls—among other things—seem to vary in the degree of independence that is envisaged for them. I hope that in the course of this enquiry the full scale of the difficulties for such analysis has become clear: the essential problem is that Galen, in spite of all his cross-referencing and systematizing of his own works, does not actually explicitly follow up—apart from the occasional tantalizing hint—the same philosophical problems in works which function in different intellectual areas or genres. *De temperamentis* tells us very little about teleology—or for that matter disease-classification—and *Quod animi mores* tells us nothing about *διάπλασις*;⁶¹ and the works on nosology just do not make clear in what way the transition is to be made from lower to higher levels of analysis.

An absolutely definite answer to the question we have been considering would require a meticulous analysis of Galen's entire œuvre. I do not offer the above argument as anything like such an answer: too much research needs to be done in neglected reaches of the Corpus. What I do claim is to have thrown into relief the problem, and suggested a fresh direction that such research might take. The works in urgent need of analysis (one is tempted to say, of translation) are essentially the series of treatises on nosological-therapeutic concerns: such works as *De differentiis morborum*, *De causis morborum*, *De differentiis symptomatum*, *De causis symptomatum*, *De differentiis februm*. I hope, though, that this paper has made a *little* clearer the nature of Galen's thought on this central issue of levels of physical analysis. Although noises are made which would imply that Galen thought all his analyses belonged within one overall scheme, and although at times he seems to favour a physical-determinist account for *all* biological activity, our ultimate answer must be one of indeterminacy. It is, though, interestingly, an indeterminacy in which Galen retains a strong sense of conflict between an analysis of physiological events in terms of the lowest level and one in terms of structure or purpose. From a modern philosophical point of view we might wish that Galen had sown up his treatises, and his styles of analysis, into one overall coherent system, either in terms of reductivism, or functionalism, or some 'compatibilist' approach. It seems, however, not only that he did not, but that he retained serious doubts about that theoretical possibility.

There is a common-sense intuition that low-level determinism is at some point undermined by accounts in terms of functions, designs, purposes—let alone in terms of the divine. It is an intuition which is vulnerable to philosophical sophistications of the sort with which modern scholarship is equipped in its analysis of ancient texts. But it seems that Galen retained—for all his logical refinements—more of that common-sense intuition than some of his latter-day exegetes might wish.

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⁶¹ Though it does contain the striking claim that the *substance* of each organic part, including the brain, is identical with the particular mixture of elements in that part.