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Introduction

This book is conceived as the companion volume to *Interpretation and meaning in the Renaissance: the case of law* (1992); it is concerned with the extraction of sense from words and signs in medicine, and the rules used to regulate such extraction. In the case of medicine, the emphasis is less on the recovery of intention from words than on the practice of drawing deductive inferences from complex evidence. Like the study of law, this book does not start from great names and great innovations, although these may be seen to have a greater role to play, given the degree of innovative thinking in medical faculties. Some of the figures who broke new ground were celebrated (or reviled) in their own day, such as Girolamo Fracastoro, Jean Fernel, Paracelsus, and Andreas Vesalius; some were commemorated in the following century (Girolamo Cardano, Santorre Santori (Sanctorius Sanctorius), Jan van Heurne (Heurnius), Daniel Sennert); some have had to wait until more recent times to enjoy recognition (Giambattista da Monte (Montanus), Giovanni Argenterio, Leonhart Fuchs); some may still not be adequately recognised (Girolamo Capo di Vacca (Capivaccius) and Guillaume Rondelet being two of these). Rather than be drawn into establishing a revised medical pantheon, however, I have chosen here to concentrate on writers whose modes of thought and expression were widely known in the medical community. Through a selection of their published writings I hope to be able give an ideal-typical account of the range of what was thinkable and knowable to the members of that community who had enjoyed much the same education and training.

It would have been much easier to have taken a microhistorical approach, and chosen one or a number of thinkers who could have been subjected to Geertzian thick description.[1] But it still seems to me that the ideal-typical approach I adopted before has its place, provided that there

[1] Geertz 1973.

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is a broad justification for the parameters within which it is set. In this case, the choice of learned medicine in the age of medical humanism (or hellenism) and its aftermath (from 1530 to about 1630) can be, and has been, argued for on several grounds.[2] It is a century of linguistic stability (that is, Latin remained the dominant form of communication); of consolidation; of textual continuity; of conciliation (initially of the medieval tradition with the new Greek medicine, as in the work of Giambattista da Monte; latterly of the marriage of Paracelsianism with Aristotle and Galen, as in that of Daniel Sennert). The closing date of 1630 marks the sharp decline in *peregrinatio medica* because of the Thirty Years War, and the consequent decline of academic exchange, which was weakened further by the disruption to the Frankfurt Book Fair.

This study is intended to reveal the ways in which the medical profession were predisposed to view human beings and the natural world by the way they were trained to think in universities, and through the doctrine with which they were inculcated. The questions which have driven this enquiry are the following: through what instruments did learned physicians think? What were their operative concepts, and how coherent were they? What did they disagree about, and in what terms? How did medical discourse relate to, and distinguish itself from, other learned discourses (theology, law, natural philosophy, philosophy itself)? I have set it out in a way similar to the book on law; it begins with a brief history of learned medicine in the Renaissance (chapter 1), followed by accounts of the modes of transmission of medical knowledge (chapter 2), and the interaction of medicine with other related disciplines (chapter 3). I then offer an extensive examination of the arts course and its complex relationship to medical logic and method (chapters 4 and 5); an account of the theory and practice of the interpretation of medical texts (chapter 6) and of the philosophical content of medical thought (chapter 7); all of which is designed to serve as an introduction to the last chapter of the book, which is a critical examination of the doctrine of signs and evidence. In the postcript I shall return briefly to the issues I have mentioned in this introduction, and offer some suggestions about the relationship of the medical discourse studied in this book both to its medieval forebear and to the emergence of experimental philosophy after 1630. Because this work sets out to survey some rather technical areas of Renaissance thought, a brief account of these is given in footnotes as background to the discussion in the text.

[2] Siraisi 1997: 3–4.

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There has in recent years been much distinguished writing about late medieval and early modern medicine and science. Scholars such as Nancy Siraisi, Andrew Wear, Vivian Nutton, Iain Lonie, Andrew Cunningham, Roger French, Charles Schmitt, Nicholas Jardine, Charles Webster, Jerome J. Bylebyl, Ole Peter Grell, Luis García Ballester, Don Bates and many others whose works are listed in the bibliography have transformed the received history of medicine and scientific practices in this period in a number of ways, and have drawn attention to a new range of problems and questions; and the field has benefited also from the work on the theory and methodology of such history done by Ludwik Fleck, Thomas S. Kuhn and others. Whole new areas of research have also been explored, among them what might broadly be called the social history of medicine, seen through the experience of patients (especially women), the activities of non-learned practitioners, the organisation of medical institutions, the collection and display of scientific objects, the production, diffusion and consumption of medical and scientific knowledge, the interaction of learned and popular medicine, and the influence of patrons, towns and courts.[3] These investigations have been related to grander narratives, charting the 'Entzauberung' or 'disenchantment' of the world, the collapse of monolithic theories (notably Aristotelian physics), the rise of scepticism and rationalism, the switch of (Kuhnian) paradigm from a qualitative to a mathematised and probabilistic approach to nature, or (Foucauldian) episteme from a grid of correspondences to a theory of representation.[4] All this is testimony of what Paul Veyne has called the 'extension of the historical agenda'.[5]

It would not be appropriate to review here all of this work: but some of its liveliest areas of debate are relevant to the present investigation and may be noted here. A great deal of attention has been paid to the relationship of Renaissance natural philosophy to the new scientific outlook of the seventeenth century. On the one hand, there is the claim (known from the work of Sarton and Crombie) that humanism impeded the progress of experimental science, which was further advanced in the fourteenth century than in the sixteenth; against this, there are those who propound the view that the source of scientific progress is to be found in the low sciences (alchemy and occultism) of the Renaissance period, and

[3] Webster 1979b; Eamon 1994; Palmer 1983; Findlen 1994; Daston and Park 1998; Ashworth 1990b; Blair 1997; Bono 1995; Céard 1996; Barona 1994.
[4] Weber 1991: 151, 351–3; Henry 1997; Kuhn 1970; Foucault 1966.
[5] Veyne 1978: 141–56.

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that the magus is the prototype of the modern experimental scientist.[6] This latter party also has its critics, among them Brian Vickers, who has argued strongly that the occult (alias hermetic, or alchemical) sciences of the Renaissance relate to a quite different mind-set from the scientific mentality that emerged in the seventeenth century.[7] A different account of Renaissance natural philosophy and medicine asserts that Galenism, which, according to García Ballester, had 'attractive complexity' for the fourteenth-century mind, was 'threadbare' and 'academic' by 1600; that a growing number of its adherents were manifesting serious unease about its claims; and that the Aristotelianism with which it was associated had declined with it into a text-based sterility, suffering from over-complexity and lack of explanatory power.[8]

Owsei Temkin attributes this alleged decline to a number of factors: the challenge of Paracelsus and his followers to the moral, political and scientific validity of learned medicine; the humanist attempt to liberate Galen from his systematisation by the Arabs; the rise of practical medicine outside the universities; the breakthrough in anatomical studies, and the practice of autopsy.[9] Such a view is consistent with the representation of Aristotelianism in the polemic of the new scientists of the seventeenth century as the most sterile of all intellectual areas, imprisoned inside peripatetic metaphysics and logic. It is consistent also with the periodisation of Renaissance Galenic studies in particular, and medical hellenism in general, suggested by Vivian Nutton: after a first, heroic, period of textual discovery, edition and commentary (say 1500–50), there followed a period of consolidation and critique, during which the metaphysical and methodological underpinnings are explicit and operative (say 1550–1600); the eventual failure to reconcile all the authorities, to incorporate the new empirical findings into the doctrine, and maintain the coherence of the medical art marked its decline, which occurred between 1600 and 1630.[10] This model of a doctrine's life cycle (familiar, in the history of ideas, through the work of Lovejoy)[11] is not professed by all historians; in their account of wonders and the order of nature, Lorraine Daston and Katharine Park prefer a cyclical pattern, in which

[6] Sarton 1953; Crombie 1994; Cochrane 1976; Yates 1967: 255; Meinel 1992: 40; Vickers 1984b: 1–55; Bennett 1998.
[7] Vickers 1979; 1984b.
[8] García Ballester 1993b: 38; Siraisi 1987a: 349; Galilei 1998.
[9] Temkin 1973: 136. Zanier 1983:1–4, 39–43 says that Galenism's extreme eclecticism is the cause of its decline.
[10] Nutton 1993a; Siraisi 1987a: 349–55.
[11] Lovejoy 1936.

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is manifested a return to favour of discredited doctrines or elements of them.[12]

There are those also who oppose the thesis of a decline in medical and natural-philosophical doctrines towards 1630, and are willing to attribute some impulsion towards scientific advance to developments in Renaissance Aristotelianism. According to J. H. Randall, Paduan Aristotelianism marks a step forward on the path to the secular and naturalistic scientific outlook of the seventeenth century;[13] this view has been strongly challenged, and a different, less progressivist, reassessment of Aristotelian natural philosophy has been proposed by Charles Schmitt, who lays more emphasis on the conceptual (as opposed to experimental) developments in both theory and practice.[14] Ian Hacking propounds a more negative view: according to him, not only is there no concept of evidence in the Renaissance in the sense of 'that by which one thing can indicate contingently the state of something else', but also this lack is aggravated by a commitment to privileging the final cause as the true explanans of any event (as opposed to the efficient and material causes, espoused by the new science of the seventeenth century).[15] This contention may be linked both to that which asserts that all testimony is based on the credibility of the witness, not the intrinsic value of the facts he adduces; and to that which sees 'facts' as we understand them emerging for the first time in the late seventeenth century.[16] Steven Shapin's *Social history of truth* develops the former view of testimony with respect to the association of credibility and social status in seventeenth-century witnesses to scientific events.[17] Others have proposed a similar view about the reception of philosophical ideas in the Renaissance, especially as mediated by the practice of commonplace books; this is said to have the effect of dissociating 'facts' from their original context, and thus of fragmenting knowledge into individual pieces (loci) which are then available to be reconfigured and given new functions in an argument.[18] According to one historian of philosophy, this fragmentation predisposes Renaissance thinkers to a nominalist outlook.[19]

[12] Daston and Park 1998: 9–12.
[13] Randall 1961; Randall 1976: 271–82.
[14] Schmitt 1983b; Wear 1981: 238 offers yet another view, suggesting that Leoniceno's characterisation of art as a utilitarian practice can be seen as 'a primitive move towards a free-standing science'.
[15] Hacking 1975: 37.
[16] Shapiro 1999.
[17] Shapin 1994.
[18] Moss 1996; Goyet 1996.
[19] Kessler forthcoming.

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Another contention concerns the status of particulars and singular cases. Paula Findlen has argued that the exceptional case or oddity takes on a new role in Renaissance thinking: not that of a deviation from the general rule but as an object in its own right. Lorraine Daston and Katharine Park have also supported this view in their work on the emergence of a group of 'praeternatural historians' (figures such as Marsilio Ficino, Cornelius Agrippa, Girolamo Cardano, Scipion Dupleix and Giambattista della Porta) in the early modern period. These are said to espouse a new kind of enquiry into the occult forces and aberrant manifestations of nature, characterised by the abandonment of the medieval concentration on the normal and the regular.[20] The switch from an interest in the general to an interest in particular instances parallels the switch traced in the various writings of Peter Dear from the scholastic reliance on 'experience' (that is, generalised statements about how things usually occur based on sensory evidence available to all) to the practice of 'experiment'.[21] Both praeternatural historians and experimenters are associated with the rise of technology, because art is a form of praeternatural activity by which man imposes his own order on nature.[22] Their articulate spokesman is Francis Bacon, who instructs the readers of his *Advancement of learning* to engage in the study of 'nature erring' and 'nature wrought' as well as 'nature in [her ordinary] course', and to begin their reclassification of natural objects by an inductive process, which privileges the individual case.[23] Bacon it is also who explicitly poses the question of the expansion of the field of knowledge. Whereas in the Middle Ages, according to Edward Grant, the limited range of 'quaestiones' which were permitted in disputations restricted the possibility of enquiry (a claim made also by Paula Findlen about natural philosophy in the Renaissance),[24] Bacon is able to assert that having discovered new lands, new seas and new stars, it would be disgraceful for men of his age to allow the world of the mind ('globus intellectualis') to remain circumscribed by the same boundaries as before.[25] Knowledge also manifestly

[20] Findlen 1994; Daston and Park 1998; Grafton and Siraisi 1999.
[21] Dear 1987; 1990; 1995.
[22] Newman 1997.
[23] Bacon himself acknowledged however that some effort, albeit wrongly focussed, had gone into the recording of praeternatural events: Bacon 2000: 63.
[24] Grant 1978; Findlen 1994: 4.
[25] Bacon 1878: 277 (*Novum organum*, i.84): 'Neque pro nihilo aestimandum, quod per longinquas navigationes et peregrinationes (quae seculis nostris increbuerunt) plurima in Natura patuerint, et reperta sint, quae novam philosophiae lucem immittere possint. Quin et turpe hominibus foret, si globi materialis tractus, terrarum videlicet, marium, astrorum, nostris temporibus immensum aperti et illustrati sint: globi autem intellectualis fines, inter veterum inventa et angustias cohibeantur.'

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increases in the sphere of medicine in the course of the sixteenth century; not only knowledge of new diseases and new materia medica, but also new discoveries in anatomy. This poses a problem which was already explicit to the minds of fifteenth-century thinkers, and which is posed anew by learned doctors in the Renaissance: is the mind the measure of all things, or can man aspire to knowledge of the universe beyond this constraint and the limitations and uncertainty of information obtained through the senses?[26] These questions add immediacy to the philosophical discussions about classification and the relative value to be placed on empirical information and existing theory; the presence of elaborate accounts of logic in medical treatises at the end of the sixteenth century is as much due to them as to a devotion to theory for its own sake.

In attempting to give historical accounts of medicine in the early modern period, one encounters also more general questions of theory and method. A much debated area concerns the alternative hypotheses of realism and social construction.[27] This is a dichotomy whose shortcomings have been widely discussed, and which Ian Hacking has called to be replaced by 'richer tools with which to think'.[28] When Jon Arrizabalaga, John Henderson, and R. K. French's *The great pox: the French disease in Renaissance Europe* was reviewed in the *Sunday Times*, its reviewer, betraying a trust in modern scientific categories which is not shared by all its modern practitioners, called for the reader's 'objective interest in the condition and its agent' to be satisfied, which the authors of this study in the cultural reception of a complex phenomenon had declined to do.[29] A more extreme constructivist position would involve the claim that it would be inappropriate to talk of plague before the date of the discovery of the plague bacillus;[30] this affirmation of the impossibility of achieving an objective account of past phenomena (such as witches)[31] rests on the broader assumption that there is no such thing as a meta-discourse or an extra-linguistic space in which to adjudicate between the 'objective facts' of the past and the past's own account of such facts.[32] Even a cure can be seen as a construction of the profession or the community in

[26] Blair 1997: 4; Bacon 1878: 210–11 (*Novum organum*, i.41).
[27] This debate has become involved in the so-called 'science wars': for a judicious account of these, see Jardine and Frasca-Spada (1997).
[28] Hacking 1999: 1; Wear 1995a: 151 sees a more complex split in the historiography of medicine: both between internal and external, and epistemic and sociological.
[29] *Sunday Times*, 19 January 1997, Book Section, 6.
[30] Cunningham 1992.
[31] Clark 1997: 6–7; cf. Jones 1940: 178: 'if the law says sorcery exists, then it exists'.
[32] This is an assumption already voiced in the Renaissance by Juan Luis Vives in respect of the mind's ability to know itself: Vives 1555: 2.516.

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which it occurs.[33] Such a view does not imply necessarily a thoroughgoing relativism,[34] only the proposition that knowledge and meaning are negotiated by the communities in which they arise, by a process which Don Bates has called 'coherencing'.[35] Such negotiation also has connections with the claims made by Quentin Skinner and others on the one hand that rhetorical, dialectical and topical argumentative procedures affect the whole mental universe of the Renaissance[36] and, on the other, the more radical claim that there can be no such thing as objective or pure description; every statement is theory-laden, or impregnated with interpretative procedures and premisses.[37]

Three claims are made about the conditions intrinsic to thought which are relevant to here. The first, by T. S. Kuhn, is too well known to be rehearsed at length. It involves the contention that paradigms of science are incommensurable; that they are discontinuous; that they contain their own validation processes; that they are espoused by a scientific community; and that while the paradigm is in force, there is such a thing as 'normal science', which can be represented not only by the brightest minds of any generation, but also by scientists of the middle rank. Paradigms can of course co-exist; and it is implicit in Kuhn, and explicit in some of his followers, that there are two in the period of the Renaissance; one espoused in university circles intent on preserving received Aristotelian doctrine, another in new research fields such as chymistry, magnetism and the low sciences, which did not suffer that constraint.[38] A different distinction of paradigm is that which, according to Brian Vickers, separates the mentality of seventeenth-century adherents of the new science from Renaissance occult philosophers who eschew abstraction, jealously guard the secrecy of privileged knowledge for adepts, do not encourage others to repeat the experiments through which they establish their lore, are the victims of the anthropomorphic, socio-religious or occult categories by which they structure their knowledge, and look upon their activities as religious rather than secular in nature. Vickers sees the occult philosophy as failing to distinguish between words and things, between metaphor and literal meaning, and between the use of analogy which dominates the thought it is meant to enlighten by reifying

[33] Siraisi 1997: 35.
[34] Daston 1997: 6.
[35] Bates 1998.
[36] Kristeller 1988; Skinner 1996: 19–110; Mack 1990; Schmidt-Biggemann 1983.
[37] Gadamer 1962; a claim refuted by Engel 1990.
[38] Kuhn 1970; Eamon 1994: 6–7; see also Fleck 1979: 39 (on *Denkstil* as 'the given stock of knowledge and level of culture'); Iliffe 1998: 349.

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it on the one hand, and on the other the scientific use of analogy as a heuristic tool.[39]

A second claim, not necessarily that of Kuhn himself, but certainly to be associated with the name of Gaston Bachelard, concerns the thinkability of propositions and theories. According to Bachelard, there is an 'epistemological obstacle' which prevents thinkers in a certain mind-set from surpassing the limits of their thought; thus, for example, there could be no probabilistic thought before the elaboration of an appropriate notation and a community to operate it and make it their own mental property.[40] Lorraine Daston's statement in *Classical probability in the Enlightenment* that until the nineteenth century 'causeless events were unthinkable' is another example of this.[41] Karl Popper energetically opposed this view; while conceding that we are always within the prison-house of our mind-set, he argued that we are at any time able to transcend it by recognising its limits.[42] This argument has been developed by Graham Priest, among others.[43] My own investigation is in agreement with these claims for limited self-critique, which have implications also for historical semantics and the conditions under which it can be claimed that a proposition is indeed 'thought'. There is a risk in adopting Popper's position, which is that everything may become translatable into the past; by taking elements of past thought out of context, one can detect prior versions of nearly all modern thinking, not least (as we shall see) Popper's own falsification theory. The strictures of the Annales school against such anachronistic thinking and the demonstration by Stuart Clark in his excellent article on popular beliefs in France of the dangers of departing from the terms and categories by which actors in past events describe their participation in them are to be borne in mind here as salutary warnings.[44]

A third set of claims is associated with the name of Alexandre Koyré, and concerns the influence of metaphysical presuppositions on scientific thought, the role of mistaken theories in the progress of science, and the greater importance to be attributed to the emergence of problems than to the achievement of concrete results.[45] I believe that there is a risk that if the history of science is treated with this degree of abstraction from

[39] Vickers 1984b: 41–2, 95; also Clulee 1984: 57–9.
[40] Bachelard 1933; Fleck 1979.
[41] Daston 1988: 10.
[42] Popper 1970.
[43] Priest 1995; Pickering 1995.
[44] Clark 1983.
[45] Koyré 1958.

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its context, it will under-represent the means by which thought comes to be propagated through institutions and through the various media of publicity available to thinkers. I have argued elsewhere that ideas are sustained and spread through human institutions such as universities; and that the speed with which they change (and whether they change at all) is dependent on the means available to teach them to others, to publicise and circulate them, and the willingness of sponsors to pay for such diffusion. In doing so such sponsors may be serving a variety of interests beyond the purely intellectual (if there is such a thing as a purely intellectual interest); and they may be engaging in a process which they do not fully control (indeed, which no one may fully control, for it is not possible accurately to predict the uptake by others of texts which are widely circulated). The ideas thus diffused may not be perfectly or completely comprehended, or may be taken up in contexts quite different from that in which they were first conceived.[46] Koyré himself acknowledged many of these points, although in practice he did not always employ them in his historical works.[47]

These are some of the issues which this study sets out to investigate; in discussing them, I should declare a commitment of my own, namely that Galenic medicine was not in the moribund state in which it is said to be by Temkin and O'Malley and by later seventeenth-century polemicists (which is not to say, of course, that it was not subjected to critique).[48] It seems to me to be animated by vigorous polemics, and to be informed by novel attempts to adapt its conceptual structures to emergent knowledge. Not least among the signs of this vigour is the doctrine of symptoms, signs, illness and cause of which this study shall speak. I shall argue that the part of medicine known as semiotic or semiology (about which some notoriously false claims have been made)[49] grows in importance towards the end of the sixteenth century, as does practical medicine in relation to the theoretical part. Both reflect the complex relations between the empirical and rational parts of

[46] Maclean 1998a, 1998c.
[47] Redondi 1987.
[48] Temkin 1973: 134ff.; O'Malley 1970: 101: 'it was in the latter sixteenth century that the medical students were exposed to the first stirrings of doubt and the first suggestions of overthrow of a complacent classical medicine, and its replacement, although in the distant future, by one more scientifically based'. Cf. also Wightman 1962: 263 (on Galenists as 'academic pedants' and slaves to authority' as opposed to forward-looking [al]chemists).
[49] Lehoux 1976: 483: 'il faut attendre 1650 pour rencontrer, chez Jean Henry, l'un des premiers traités de sémiologie'; cf. Dewhurst 1966: 59: 'Sydenham's revival of the Hippocratic method of studying the natural history of diseases by making a series of accurate and detailed observations set the clinical pattern for future progress.'

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