

QUAEDAM VERITATIS UMBRAE: HELLENISTIC MAGIC AND ASTROLOGY

Richard Gordon

Every classicist has surely dreamed that some lost work or other might one day miraculously be recovered from the sands of Egypt. But there can be few in the modern age who have longed to recover one of the occult books on Nature, that is on natural magic, put out in the "Long" Hellenistic period down to Nero,¹ some under the names of Democritus, Pythagoras, the Egyptians Hermes Trismegistus, Apollobeches (or Apollobex) and Manetho, Zoroaster and Ostanes of Persia, the Jewish Dardanus, or Mochus of Phoenicia, but also some, such as the books of Demetrius *ho phusikos* (Pliny *HN* 8.59), Nigidius Figulus, Anaxilaos of Larissa, Apollodorus *adsectator Democriti* (Pliny *HN* 24.167) or Xenocrates of Aphrodisias, written in proprio nomine.² Their flavour can be inferred from a list compiled by one Asclepiades, who had evidently drunk deep of these muddy waters. He recounted how the plant *aethiopsis* dries up streams and ponds; that the mere touch of another whose name is mangled "causes locks to spring open"; and that a certain *latace* used to be given by the Persian kings to their satraps to ensure that wherever they went they would have supplies (Pliny *HN* 26.18). Different in idiom, but quite as difficult for the modern observer to engage with, is the discourse of astrological handbooks, of which the melothesia, the scheme of planetary influences upon the human body, of the anonymous treatise known as *PMich* 149 may provide an example:

But at 130' we must mark off the portion of the Moon; and it will include the calves; and somehow, whenever we see a noteworthy face, we go around and straightway see the calf of the leg, since naturally the portion of the Moon which is akin to it leads to all this. Afflictions, fractures, and amputations of the leg come about through the Moon's influence.³

It has long seemed natural in modern scholarship to treat the occult discourse on Nature and the astrological treatises as evidence for the same Hellenistic phenomenon, the rise (or perhaps return) of irrationality. This may be termed the classic

reaction, typified by the exasperated tone of Hermann Diels in his *Antike Technik*, who described the pseudo-Democritan literature as:

A cloudy scientific and gnostic mysticism, full of religious formulae, bogus quotations from philosophers, occult conjuring and magic — in sum, a real witch's brew of sense and nonsense, of Greek gnosis and oriental superstition (1920, 130).

The return of the irrational is also the burden of the last chapter of E.R. Dodds, *The Greeks and the Irrational* (1951), and, insofar as it has a single theme at all, of the second volume of Martin Nilsson's *Geschichte der griechischen Religion* (1961). It has recently been forcefully restated by Peter Green (1990). His version of the argument is framed in terms of the political contrast between the classical polis and the Hellenistic kingdoms. The key problem is seen as the loss of a "special sort of confidence that only self-determination can produce", a confidence created in the classical period by the existence of democratic and autonomous states. The destruction of these states in the period 350-300 BC prompted people, unsettled by the disruption of old certainties, to turn in one of two directions. Those with education and leisure turned inward on themselves, in quest of the familiar values of Hellenistic philosophies. The other route was open dependence — on divinized, palpable kings who might take the place of the absent gods, but more often on symbolic satisfactions, ecstatic or mystery cults, astrology and magic (Green 1990, 52-64; 586-681). "The age was hungry for visions, for miracles, for knowledge of what lay beyond the boundaries of nature and reason: Plutarch's Timarchus was told he would die in three months, and did" (595).

This account of what was happening at the religious level during the Hellenistic age is so well-known that it has the air of a fixed and immutable truth. And, though it is easy to see how it is based on a scarcely-mediated opposition between an idealised Classical polis and the Hellenistic age, and how it minimises the numerous continuities between them, it may not for all that be entirely wrong. A standard work on the rise of the occult in nineteenth-century France, for example, shows how the origins of that revival lie in the mid-eighteenth century, when the old order, court power and enlightenment philosophy, was crumbling, and claims roundly: "The human mind abhors the absence of irrational belief" (McIntosh 1972, 18). On that reading, irrationalism would be the natural child of scientific and progressive philosophies or world views, and its appeal would be to those excluded from these philosophies.⁴ And Foucault has taught us, in more general terms, to be prepared for precisely such a reading, to see intellectual

and cultural history as a battleground between those with a "right" to discourse, and those refused it.

There is a casual sense in which the claims of Asclepiades and of the melothesist of *PMich* 149 are "irrational", that is, educated twentieth-century westerners are likely to find them absurd. If that is all that is being said, we may simply note that the Greeks are once again failing to fulfil the rôle of cultural heroes thrust on them by a certain tradition of Romanticism. If the claim is more substantial, it must be that "people" in the Hellenistic period chose to embrace what they themselves considered irrational beliefs. But before we as historians accept this version, it would be as well to take a second look at the character of the evidence offered.⁵ On the question of the character of mystery cults, Walter Burkert has surely said enough (1987) to make the thesis of irrationalism seem oddly by the way: if anything, it was in the mystery cults, certainly not in civic cult, that an attempt was made to expound the intentions and significance of religious rituals. To claim ecstatic cults as a typically Hellenistic phenomenon is simply to elide the history of the cults of Dionysus and Bendis. But in this essay I want to take a closer look solely at the cases of magic and astrology.

For Green, restating the traditional view, it is self-evident that "astrology and magic" somehow belong together in one breath and that we are talking about widespread, indeed newly vigorous, belief — even if the social location of that belief remains strangely imprecise. In my view, the casual coupling of magic and astrology, a product of the dismissive view that sees them as symptoms of the decay of a heroic Greek rationalism, is to be resisted: their social contexts and rôles, their *Sitz im Leben*, are in fact quite sharply distinct.⁶ It is true that Pliny the Elder's account of magic, which goes back to Hellenistic sources, presents it as possessing "*quasdam veritatis umbras*", "shadows of truth as it were", one of which is astrology.⁷ But this is not a formulation which gives much encouragement to those who believe in the irrationalist thesis.

Second, the very terms magic and astrology in this context are notoriously elusive. Now they mean "general belief in" certain claims about the world, now "frequent consultation of practitioners" of one sort or another, now "discursive texts which provide us with evidence of the beliefs that were around". It bears stressing that we possess very little direct evidence for either strong commitment to or practice of magic and astrology in the Hellenistic period — Green, for example, is reduced to citing late antique evidence for malign magic from the magical papyri, and, as we shall see, the documentary evidence for astrological practice in the Hellenistic world is extremely poor — but for the most part only evidence for books about these topics. The existence of discursive texts on magic

and astrology in the Hellenistic world is interpreted as evidence for a new intensity of popular belief and practice. This inference seems to me at best unargued, and in all probability quite doubtful — at any rate, in need of considerable nuance. But before we can talk about the place of magic and astrology among the conventional values of the Hellenistic world, which I come to in the third section, we need to examine the character of the texts which are offered as evidence. That is my purpose in the first two sections of the article.

Some prefatory remarks linking the Hellenistic discourses of natural magic and astrology to wider contemporary themes are perhaps in order. For there are at least three contexts in which Hellenistic magic and astrology do indeed converge, namely as discursive dogmatic texts, as examples of “alien wisdom” and as pseudepigrapha. All of these have their place among the inventory of conventional values in the Hellenistic world.

The occult writings on Nature and the books of early astrologers⁸ were essentially compilations of reference material, lists of reported facts and procedures whose significance was not so much individual as cumulative. These materials required to be written down in systematic order, whether alphabetic, topical or schematic, because their inherent connections were extremely meagre. Both kinds of text depended upon the prior existence of a tradition of natural-scientific enquiry and of an audience able to place their claims and procedures in context (cf. Lloyd 1979, 59-125). There can for example be little doubt that the facts and supposed facts (“factoids”) listed by the occult writers were mainly drawn from work put in hand by the Peripatetic tradition, above all Theophrastus’ works on nature; from geographies of the Orient, such as the works of Ctesias, Callisthenes, and Onesicrates;⁹ and from the characteristically Hellenistic genre of the agricultural manual (Oder 1910, 1221-22; Gabba 1984, 28-29).

As texts, the books on natural magic and astrology exemplify an advanced stage in the development of pre-incunabular literacy, in which writers specializing in the accumulation of a complex mixture of empirical facts and factoids arranged in terms of explicit higher-order conceptions about the world, and claiming practical utility of a restricted kind, could find an audience furnished “con una mentalità e un bagaglio libreschi” (Cavallo 1983, 172). The existence of such highly specialized, and not at all entertaining, texts correlates with the Hellenistic phenomenon of slight extension of reading ability among the free inhabitants of cities, with foundations being set up in cities such as Teos, Miletus and Rhodes to pay teachers of writing, combined with markedly greater reliance upon reading and writing among the élite (Harris 1989, 116-46). For such texts were not a component of the public culture of the Hellenistic cities; but rather a component

of the construction of an all-but-private world at the disposal of a tiny leisured group, a fraction of the élite as a whole, whose avocation was scholarly learning.¹⁰ We shall return later to the issue of readership.

The issue of discourse and reception is inseparable from that of “alien wisdom”, the Hellenistic negotiation with complex foreign cultures made necessary by Alexander’s conquest of the Achaemenid empire.¹¹ “Democritus” wrote works expounding Babylonian and Nubian sacred texts (or perhaps hieroglyphs, i.e. non-Greek scripts), and a *Chaldaios logos*, probably a book of syncretistic religious speculation, which have been dated as early as the third century BC (Diels *Vorsokr.* 68 B298b, 299a,d).¹² Other Hellenistic occult books on Nature reveal some access to the material contained in the Seleucid cuneiform šikinšu-lists of plants and stones, themselves resting upon much earlier exorcists’ “tablets about stones” and “tablets about plants” (cf. Reiner 1985, 593).¹³ Again, Seleucid Babylonian lists are either the direct source or the ultimate inspiration both of Greek interpretations of astral and meteorological phenomena (Pingree 1987, 620-23) and of the characterological classifications employed by the Greek astrological writers. Although Berossus’ “school” on Chios (Vitruv. *De Arch.* 9.6.2 = Jacoby *FGrH* 680 T5a) has rightly been scouted,¹⁴ Epigenes reportedly used observations recorded on clay tablets, which must have carried cuneiform writing (Pliny *HN* 7.193 = *FGrH* 680 F16b).¹⁵ Accurate information regarding the schools of “Chaldaean astrologers”, that is Babylonian interpreters of non-hepatoscopic omens and principally the stellar motions, is to be found in Strabo and Pliny the Elder.¹⁶ Indirect transmission through speakers of Aramaic, once suggested by A.L. Oppenheim, is to some degree confirmed by the discovery of texts in Palestinian Aramaic closely analogous to Babylonian exemplars (Greenfield and Sokoloff 1989).¹⁷

As borrowings, such elements were open to furious recasting: “alien” wisdom in the Hellenistic world was, even more than in the fifth and fourth centuries, as much Greek as it was foreign (Piccaluga 1987). But whereas in the Archaic and Classical periods the barbarian Other constituted a stock of tropes for the exploration of the hierarchy of Hellenic norms, appeal to alien wisdom in the Hellenistic world often was a means of legitimating new values in the broadest sense religious. What the “wise nations” in general had to offer the Greeks was privileged access to a whole spectrum of non-civic religiosity. They were a significant element in the Hellenistic reinterpretation and transformation of traditional religious meanings (cf. Bilde 1993).

The appeal to the alien justified the third feature common to the two types of text: recourse, frequent though by no means universal, to pseudonymous

authorship (Festugière 1950, 309-54). The very names of the occult writers, Zoroaster, Ostanes, Dardanus, Hermes, Apollobeches, Mochus, are so many appeals to the fascination of the obscure; and the still more favoured names Democritus and Pythagoras are mere disguises for the same appeal — for everyone knew that both had learned their wisdom from the Egyptians, or the Persians, Chaldaeans or even the Gymnosophists.¹⁸ Whatever the place of named historical individuals in the astrological tradition, the most famous Hellenistic astrological texts were those ascribed to an Egyptian god, Hermes Trismegistus — 20,000 by one enthusiastic account, 36,525 by another¹⁹ — and to two quasi-historical persons, Nechepso, an all-but-imaginary Pharaoh, and Petosiris, “Gift of Osiris”, a priest.²⁰ Pseudonymity registers another feature of Hellenistic literate culture, the tendency to turn great names from the past into authority-figures, “to whom appeals could be made as some kind of guarantee of the validity of the ideas associated with them” (Lloyd 1987, 105). As in the ancient Near East, the written text becomes a vehicle for the transmission of authority, the name of the author serving to bracket the claims contained in the text from the kind of pragmatic doubt both writers and readers commonly applied in their everyday experience. “As the quality of the data falls, so the stature of the sanctioning authority rises” (Beck 1991, 502).

In each of these contexts, the Hellenistic literature on natural magic and astrology can be considered products of convergent tendencies in Hellenistic literate culture. We turn now to a closer examination of the characteristics of each of the two bodies of texts. My general claim is that each discourse, taken as a whole, basing itself on the natural-philosophical category Nature, sought to supplement or complete traditional practices in the same general area, rhizotomist practice in the case of the discourse on Nature, traditional divination in the case of astrology. If modern occultism represents a flight from the domination of science and technology, Hellenistic occultism and astrology attempted to systematize and partially rationalize prior *praxeis* whose assumptions were almost wholly tacit. This process of supplementation amounts sometimes to no more than what Geoffrey Lloyd has called “the literate representation of Greek folklore” (1983, 202). But sometimes, especially in the case of the discourse on Nature, it implied the occlusion or pre-empting of less articulate and self-conscious knowledge-practices. Literate discourse, as Pauline Schmitt Pantel has urged elsewhere in this volume, cannot simply be opposed to “conventional” representation; but neither is it, at least in these cases, an unproblematic reflection of such representations.

1. The discourse on Nature: Bolus of Mendes

First, the Hellenistic discourse on Nature, *ta phusika*, which I propose to term, for the sake of convenience, the “Democritean” tradition. There is no space here to deal with the whole range of this fragmentary and hopelessly obscure material, and I propose to confine myself exempli gratia to the figure of Bolus of Mendes in the Egyptian Delta, who was active c. 200 BC. This is not because I share Max Wellmann’s hypothesis that Bolus was the sole source of the entire “Democritean” tradition, but because he is the only one of these authors, apart from Nigidius Figulus, who is more than a shadow.²¹

But not, it must be confessed, very much more than a shadow.²² The basic problem is the nature of the relationship between Bolus and the Greek philosopher Democritus of Abdera (active c. 430 BC), with whom he is associated in the doxographical tradition.²³ Bolus evidently put out at least one of his works under the pseudonym Democritus. Columella and Pliny, who were contemporaries writing in the mid first century AD, make it clear that he wrote at least one book, the *Cheirokmeta*, “the book of artificial remedies”, under the name Democritus. Pliny evidently knows of a controversy about the matter,²⁴ while Columella roundly states that the book was a forgery whose real author was Bolus (*Rust.* 7.5.17 = Diels *Vorsokr.* 68 B300.3). On the other hand Vitruvius, writing in the 30s and 20s BC, who ascribes the book without ado to Democritus, apparently knew nothing of the dispute (*De Arch.* 9.1.14 = Diels *Vorsokr.* 68 B300.2). The most probable explanation of this discussion in the early Empire is to be found in the cataloguing work of Ti. Claudius Thrasyllus, the astrologer of the Emperor Tiberius. Thrasyllus (or Thrasyllus) catalogued the works ascribed to Democritus of Abdera, and in the course of this task came to consider that some were spurious.²⁵ The list cited by Diogenes Laertius names in an appendix eight such works, one of which has been conjectured to conceal *Cheirokmeta* (Diog. Laert. 9.45-9 = Diels *Vorsokr.* 68 A300.33).

There has been a general reluctance to describe Bolus’ work as forgery.²⁶ One recent suggestion is that we should imagine the relationship between the two as analogous to that between the Socrates of the dialogues and Plato. Bolus’ residence in the Delta would have given him access to the Alexandrian library, and he may have begun by compiling authentic material from Democritus’ writings, but gradually suffused them with his own views (Laurenti, 1985). This seems naive. In my view, the best solution is to take Bolus as indeed a forger, that is, as intentionally publishing books under a false name in order to give his own views greater authority, but that the choice of Democritus was quite appropriate to his purpose in promoting a theory of natural magic. Without

denying the frequent impenetrability of forgers' motives, Grafton has lately stressed that the forger commonly sees his invocation of a name as giving a sense of probability and importance to what he has to say (1992, 48).²⁷ Forgery is one among several ways of coming to terms with the past, which is subjectively recast in the mould perceived by the forger, and then, as the forgery wins acceptance, also objectively — the forgery actually remakes the past (96). The succession of references to "Democritus" (and the rest of the pseudonymous tracts) by Clement of Alexandria, Hippolytus and others, long after the impact of Thrasyllus' discovery had worn off, shows that the gamble paid off handsomely.

Of the several books ascribed to Bolus by the Suda's two entries (Diels *Vorsokr.* 68 B300.1), mention may be made of three to give an idea of the kind of material they contained.

His book of marvels, *Peri tôn ek tês anagnôseôs tôn historiôn eis epistasin hêmas agontôn*, or *Peri thaumasiôn* in brief, is not known to have been ascribed to Democritus.²⁸ Bolus' contribution to the paradoxographical tradition seems to show some awareness of the rules for the genre established by Callimachus' *On every variety of marvel topographically arranged* (Giannini, 1964, 105-9), in that he cites named authors for example; on the other hand its subject matter is quite at odds with post-Callimachean naturalism. The book seems to be the source of the first six entries in Apollonius, *Historiai thaumasiai*, a work probably of the first half of the second century BC.²⁹ These items describe six famous early *andres theoi*, holy men, Epimenides of Crete, Aristeas of Proconnesus, Hermotimus of Clazomenae, Abaris, Pherecydes and Pythagoras. The stories stress soul journeys, presence in two places at once, and second sight: the gulf between heaven and earth has repeatedly been crossed by exemplary historical individuals. The citation of historical authors certifies the authenticity of the claims, and thus the inference to be drawn from them, namely that divinity, if not the divinities of civic religion, is immanent in the world. It is its overtly religious intention that marks this work by Bolus off from the main Hellenistic paradoxographical tradition.

Though the other two works I wish briefly to discuss are not strictly paradoxographical, there is a dilute sense in which they also belong to the genre, if to an entirely un-Callimachean conception of it. For a second book by Bolus, certainly written under Democritus' name, is the *Phusika dunamera*, "(Remedies of) natural potency", also called more descriptively *Peri sumpathôn kai antipathôn*. Columella cites one account from it, namely the belief that caterpillars will be killed if a woman walks round the field three times, barefoot, with her hair down and while she is menstruating, "and afterwards all the caterpillars fall off and so die" (*Rust.* 11.3.64 = Diels *Vorsokr.* 68 B300.3). Another probable fragment concerns among

other topics, the relation between the ferret and the fox: "The domesticated ferret is antipathetic (*antipathês esti*) to the fox, which cannot endure its smell or sight, but dies at once".³⁰ In this book Bolus evidently collected and recast popular lore about the animal world, systematically selecting material that could be made to illustrate a thesis about inherent powers of opposition and attraction. A traditional, unsystematic and informal representation of relations between animals, that of friendships and enmities, picked up already by the fourth-century writer on gardening, Androtion, has been rigorized and turned into an explicit, privileged account of the working of Nature.³¹ It is also clear from the most common title for the book, *Peri antipathôn*, that it was mainly not about sympathy but about natural remedies based on the idea of inherent contrariety. The choice of natural facts both illustrates a claim, essentially the Stoic claim that nature is a self-regulating, living being; and insinuates a thesis, that traditional lore, though it contains substantive truths about the manner in which that natural order works, must be reworked by the occultist in order to reveal its message.

The third book is the pendant to the *Phusika dunamera*, the *Cheirokmêta*, the "Artificial remedies". If the sources are to be relied upon — by no means to be taken for granted — it contained some material drawn from traditional farming practice: Columella cites it, for example, for a remedy against *ignis sacer* in sheep. The sheep with the disease is to be buried alive, belly up, at the entrance of the sheep pen and the other sheep made to walk over the spot (*Rust.* 7.5.17 = Diels *Vorsokr.* 68 B300.3). By inference, this is an "artificial remedy" in that the farmer intervenes into the processes of nature by constructing a liminal point analogous to that used in malign magic, and referring to other deliberate infringements of the normal rules for sacrifice, such as those for averting disaster presaged by omens. But other parts of this text owed more to the paradoxographical tradition. The elder Pliny cites a section in which a herbarium of the exotic marvellous was evidently listed in alphabetical order: all the plants, except for one from Cappadocia and Mysia, are alleged to come from the orient or Ethiopia, and they all have miraculous properties:

Arianis comes from Ariana (the satrapy) and is fire-coloured. It is gathered when the Sun is in Leo. If you soak sticks in oil and put them in contact with the plant, they catch fire.

And:

The theangelis ... is taken by the Magi as an infusion so that they can foretell the future (*HN* 24.160-66).

Magic is here equated with the practice of the Persian Magi, in the agreed terms of the Hellenistic pseudo-historical aetiology (Gordon 1987, 74-79). But it is at the same represented as entirely natural, a matter of exploiting knowledge of properties inherent in certain constituents of nature. Incantation, the second leg of actual magical practice, has mysteriously disappeared from view. More generally, such lists, which occur repeatedly in the "Democritean" tradition, create a textual site in which the world becomes an Alician Wonderland, a place in which marvellous events are commonplace, in which one extraordinary fact presses breathlessly against the next until the reader has no choice but to concede that the commonsense boundary between actual and impossible, between what I know to be true and what I know to be false, is hopelessly uncertain. Per contrarietatem, the appeal to empirical facts — factoids of course, but who was to insist on the hard facts of so many cases in far off Arachosia, Persia or even in the local woods? — amount to an attack upon the validity of a mechanistic, especially an Epicurean, physics. For every one of these facts offers a challenge, composes an implied entry in a *Problemata*, a book of knotty natural problems.

We turn now to the more general question of the function of the occult discourse on nature typified by the work of Bolus. I would urge that the redescription of selected natural facts as marvels strung together on an occult string had the effect of clearing a space between the tacit, incoherent quality of traditional belief on the one hand, and those trends in Hellenistic cosmology, particularly Epicureanism and scepticism, which tended towards rationalism and agnosticism on the other. That space the occultists attempted to fill with a demonstration of the superabundant strangeness of nature. The variety of the occult texts and their fragmentary state — the fact that no programmatic statements survive — naturally make one cautious about making such a claim. And Pliny's observation: "I imagine that they can only write such rubbish because they despise mankind and want to make fun of it" (*HN* 37.124), is so exactly our immediate reaction that we are excused from wondering whether there might not be alternative views, whether the discourse on nature might not have had a serious intent of this kind.

There seem to me to be two main reasons for thinking so. One is the occult tradition's total lack of interest in ordinary conceptions of magic and magical procedure, to which I have already alluded. But the point bears expansion. First, although Bolus and the other Hellenistic occultists were at least partly concerned with the lore of traditional magical healers, *rhizotomoi*, "root-cutters" and wise women (Kingsley 1995, 337), there is no evidence that they concerned themselves with first-hand collection of such material. Their facts or factoids were taken from

earlier books, and some no doubt even invented. Such a procedure meant that the contextual meaning of magical practices as well as the ritual underpinning was lost. What survived was a mere claim, an extravagant statement of automatic effectiveness. Second, occult literature typically made sense of magical “facts” in a quite different way from its practitioners. Competence for a root-cutter lay in two directions, in the knowledge of rules for collection and preparation of plant and animal materials (Delatte 1938; Martini 1977) and in the construction of elegant recipes in keeping with the tradition he or she had learned. By contrast, the occult tradition had interest neither in the rules nor in the elegance. Its “magicians” are not humble root-cutters but the Magi, the exotic representatives of a class of wonder-workers. The transfer of magical action out of the real world of the rhizotomists into the world of the Magi serves to transform the character of belief in magical effects. Magical beliefs were redescribed under the rubric of marvels, free from the messy and tedious practicalities of collection, preparation, and application. The “Democritean” tradition was not primarily, if at all, practical in intention.³² But it does form an essential part of an emergent Hellenistic concept of magic far removed from the actual practice of root-cutters and wise women.

The second reason for thinking that the “Democritean” tradition was working, perhaps fitfully, towards a middle ground is its use of perfectly respectable Classical and Hellenistic explanatory terminology. The principal terms for occult influence, *dunamis* in Greek, *vis* in Latin, are taken from the language of Greek natural speculation, both Hippocratic and Peripatetic.³³ There is no question here of a metaphorical extension by the “Democritean” tradition of a clear or determinate concept in natural philosophy: one can hardly even allow *dunamis* a “focal meaning” of the Aristotelian type, with other secondary meanings clustering around it (Lloyd 1987, 198-203). But occult *dunamis* does draw upon the implication frequently present in natural scientific contexts of “specific property”, represented by the noun with an adjectival complement — the Aristotelian nose for example has a “power of smelling”, a *dunamis osphrêtikê*. It combines this notion with the second main implication of *dunamis*, “the effect one thing has upon another”, as in the “powers” of the humours that play such an important part in *On Ancient Medicine*. These natural-philosophical usages are then applied in a quite mechanical fashion to provide an account of the marvellous: the wolf has the power to induce sleepiness in a horse that steps on its tracks (Pliny *HN* 28.157).

The notion of sympathy was likewise taken over from the natural-philosophical tradition: it was a central element already in Zeno’s cosmology (Long 1982, 167-68), and traces of the notion, limited to the internal relations of parts of the body,

are already to be found in the Hippocratic *De alimento* §23. But there are important differences between the typical Stoic *exempla* that proved that the cosmos was thoroughly ordered, the appeals to the influences of the Sun and Moon, the power of the magnet and so on, and the usages found in the “Democritean” tradition. In particular, the latter hardly uses the notion of sympathy at all (Röhr 1923-24, 34-38), let alone the common Hippocratic idea of like curing like (Müller 1965). It is antipathy, more usually in the verbal form *antipathein*, that is made to do the work of explanation, acquiring a useful double sense, that of reciprocal or corresponding passive affect, and secondly rejection or intolerance. It is by means of this semantic slide that the notion of an occult force at work in healing or in relationships between plants and animals could be made plausible.

Explanation was in fact not the occultists’ main intention. Their slogan was that the natural world ought not to be subjected to rationalistic enquiry: “seek not the cause but the will of Nature”, *nec quaerenda ratio in ulla parte naturae, sed voluntas* (Pliny *HN* 37.60, cf. Beagon 1992, 63-8). The will of Nature was expressed directly in its myriad unpredictabilities and astonishments. The occultists claimed simply to be recording hundreds of cases in which Nature’s inherent force might be recognised and celebrated. The implication of their combination of the marvellous with the language of natural philosophy is that they saw themselves as working against the “atheism” and scepticism of Epicureanism. This raises once again (see p. 131-32 above) the question of their intended or actual readership. It has been suggested that this was a new class in the Hellenistic world of modest reader, “not totally uneducated but simply not intellectually trained” (Cavallo 1983, 179). This seems doubtful on two counts. Pliny the Elder and other commentators in the early Principate evidently considered the “Democritean” literature part of a wider discourse on nature — Pliny lists its authors indiscriminately with others in Book 1. It is speculative to infer that the audience must have been less well-educated than the supposed readers of, say, the Hippocratic corpus. Moreover, we might observe that the “Democritean” tradition offered its readers a special privilege, a claimed insight, into the real workings of Nature: Nature constructs signs of her intentions for man, and the world itself is a kind of book in a secret language, which can only be read by the truly literate. It was the aspiration to *complete* understanding of Nature, with the book as key metaphor, that “Democritus” and his congeners promised to realise. Why should such an offer have attracted only the half-educated in the Hellenistic world?

2. Astrology as a Hellenistic knowledge-practice

Of “magic” in the Hellenistic world — in the sense of Pierre Bourdieu’s objective profanation (1971, 308), the practice of *manteis*, *baskanoi*, root-cutters and wise folk — we can say that its practice had always existed in numerous forms and that occultism had no direct impact upon that practice except insofar as the scheme of sympathy and antipathy percolated down to practising root-cutters.³⁴ Hellenistic astrology on the other hand was an entirely new form of knowledge-practice, whose origins are complex and still inscrutable. Use of the heavenly bodies for simple predictions of weather and seasons and as a guide to dates at which farming and other activities should be undertaken was of course very ancient in the Greek world; in the fifth century the parapegmatist Meton had observed the alignment of the summer solstice at Athens because of its significance for meteorological events (Bowen and Goldstein 1988). All this material is generally referred to by the German term *Laienastrologie*. But astrology proper was a radically new and much more sophisticated means of investing the heavens with language.

Its origins lie in the gradual changes that took place in the realm of celestial divination in Achaemenid Babylonia, when the stars came to be conceived as having direct and specific influence upon individual terrestrial objects (trees, plants and stones) and events, such as the configuration of signs on the liver of the sacrificial victim (Oppenheim 1959; Weidner 1967). By the very end of the fifth century BC a new type of personal nativity-omen text begins to appear (two examples of this date are now known). They consist of notations of planetary and stellar positions at the birth of individuals, sometimes named, computed from the astronomical almanacs (Rochberg-Halton 1989, 107). Sachs was surely therefore correct in guessing that the rudimentary origins of Hellenistic personal astrology lie in the Achaemenid period (1967, 19). But the most significant progressive changes in Babylonian celestial divination, and those of greatest importance for Hellenistic astrology, must have occurred in the Seleucid period.³⁵

On the other hand, Hellenistic astrology was not a straightforward borrowing of a ready-made Babylonian product. There had been some contact between priestly diviners in Assyria-Babylonia and in Egypt even in the Late Period.³⁶ But Alexander’s conquest evidently made possible a far more intense flow of Babylonian astronomic and astrological lore to the Egyptian temple *astrologoi* than had existed earlier. Several Hellenistic Egyptian texts betray use of Babylonian astronomic and divinatory procedures (e.g. Neugebauer 1949; Hughes 1951), and the earlier group of Graeco-Egyptian astronomical tables is based on Babylonian methods (Jones 1995, 37). It seems, moreover, that the dominant

Greek tradition ascribed its earliest texts to Egypt.³⁷ At any rate, a vulgate tradition, a fusion of Babylonian and Egyptian ideas, and generally ascribed to “the (ancient) Egyptians”, formed in Ptolemaic Egypt at latest by the beginning of the first century BC, and probably earlier.³⁸ This body of material, translated into the terms of Hellenistic geocentric cosmology (Long 1982, 170; Rochberg-Halton 1989, 106) and assimilated to Greek cultural realities (Konstan, in this volume), in turn formed the basis of the shared technical knowledge presented in the earliest surviving handbooks of astrology, those of Manilius and Dorotheus of Sidon.³⁹

It is the technical doctrines of Greek astrology that are usually the focus of academic study. In my present context, however, astrology is important only as a novel means of divination. What was the popular demand for astrological prediction? What claims did astrology make for itself in the Hellenistic market for divination? The following remarks about technical doctrines are intended only to contribute to answering these questions. Where reference to a text is essential, I use Manilius’ *Astronomica* exempli gratia, Books 1-2 of which were written between around 9 AD and the death of Augustus; 3-4 after the accession of Tiberius.⁴⁰ Manilius’ treatise is an example of fundamentalist or “hard” astrology, claiming that the stars “rule by hidden laws” (1.63). Although written in Latin, the poem is entirely dependent upon earlier sources in Greek.

The basic thesis of “hard” astrology is extremely simple. The casting of a horoscope is based on the belief that the zodiac and planets exert different influences, that is physical effluences transmitted by universal sympathy, according to their different positions relative to the native (the subject of the enquiry) (e.g. Sext. Emp. *Math.* 5.4-5). But the grand question is how these influences are to be read. Most systems of divination, from reading tea-leaves or coffee-grounds to the trigrams of the I Ching, consist of a limited (albeit sometimes very large) set of meanings linked to a fixed matrix, crossed by an element of chance. Thus tea-leaves, “makeshift ideograms”, are the matrix, the meanings are stored in the memory of the practitioner, chance enters in the outfall of the gesture of emptying the cup. Such a scheme is also the basis of astrology, but the matrix is extremely complicated, while the element of chance is nominally the moment of birth or conception.

Two key steps have to be taken by astrology if it is to turn the heavens into a matrix capable of providing meanings. First, it has to link two quite independent astral phenomena, the zodiac and the planets, which, although their path indeed follows the ecliptic (the sun’s route during the year), have no inherent connection with the zodiac. This was done primarily by means of the basic doctrines of the

planetary houses, and of the exaltations and depressions. Second, features of human life have somehow to be related to the heavenly bodies. To do this, the astrologers drew a picture of the fixed circle against which the zodiac and planets appear to an observer to rotate every twenty-four hours. This is the horoscopic circle. This circle is marked with four cardinal points, the *hōroskopos*, representing the rising-point at nine o'clock, and then, clock-wise, the mid-heaven (*medium caelum*, zenith), the setting-point (*occasus*) and the nadir, the "meridian underfoot" (*imum caelum*). These are the points at which the zodiac and the planets meet, respectively, the local eastern horizon, the meridian, the western horizon and the notional nadir (Manilius *Astron.* 2.788-800). The horoscopal circle, a purely notional diagram, is the crucial astrological device that mediates between the observed heavens (nature, as it were, albeit of course "divine") and human life (culture). Thus the cardinal points, mere bearings in the act of observation, acquire cosmic significance, represented by Manilius as the *compages aeternae*, the "eternal joints" (as in a piece of carpentry), without which the whole universe — and by implication human affairs — would whirl apart (2.801-7). The most usual scheme for inserting human life into the horoscopal circle is the *dōdekatropos*, the twelve "temples", each occupying 30°, which are set round the "clock-face" of the horoscopal circle in an anti-clockwise direction from 9 o'clock.⁴¹ These temples serve in a quite unspecifiable manner to channel the influence of the heavenly signs and planets as they pass through them towards particular spheres of human life.⁴² From Manilius' language it seems clear that it was the point on the notional circle occupied by a temple which inspired its association with human affairs: temple 11, for example, at 11 o'clock, signifies ambition and victory because it was imagined as aiming for the highest point;⁴³ temple 9, at one o'clock, is linked to the sun — evidently displaced from its logical place at midday by other considerations — and in most schemes (but not Manilius') is therefore associated with journeys;⁴⁴ the "lowest" temple, number 4, at 6 o'clock, is associated with foundations and darkness, and so Saturn: this temple governs fathers and the fate of old men.⁴⁵ Manilius' alternative, and simpler, techniques for linking the horoscopal circle with human affairs likewise make clear the rôle of the horoscopal diagram itself in providing the "metonymic springboard" required to negotiate this tricky crux between (meaningless) nature and (interesting) culture. In one scheme, the meridian, the *medium caelum*, is linked with glory, pre-eminence, popularity, political power; the *occasus* with bringing things to a conclusion, with marriages and feasts, with death, merrymaking and religious worship (2.808-40). Another scheme associates not the cardinals but the

segments between them with the four periods of life: and each quadrant likewise with the four ages of man, from infancy to old age (841-55).⁴⁶

Without going into any more detail, and of course the situation is indescribably more complicated than this,⁴⁷ we can focus upon three key features of the two earliest surviving astrological treatises, the poems by Manilius and Dorotheus of Sidon, features which we can justifiably claim to have been present also in the now lost Hellenistic material: the tendency towards complexity; the tension between secrecy and the didactic; the stress on the objectivity of the knowledge offered by the stars.

We may roughly distinguish between two functions of complexity, which we might term “extrinsic” and “intrinsic”. The first is the “arabesque syndrome”, by which I mean the invention of new distinctions by means of which the writer’s authority is validated. The discussion of the zodiac at Manilius, *Astron.* 2.150-692 may serve to illustrate this type (cf. Hübner 1982, 453-514).

Manilius offers ten ways of classifying the zodiacal signs. For example, six are “male”, six (including Aries) “female”; three are “human”, seven “bestial”, one both; seven are “single”, the rest “double”; some rise *rectis membris*, with their limbs the right way up, others, Taurus, Gemini and Cancer, rise “backwards”; there are three different ways of understanding the opposition “diurnal” ~ “nocturnal” (2.150-222). Finally, there are two criteria unique to Manilius: posture (running, sitting, lying); and disfigurement (e.g. Cancer has no eyes; Sagittarius has only one eye) (244-64). Neither of these is ever mentioned again. We are then given a list of twelve Guardians whom Nature has assigned to each sign, Pallas to Aries, etc. (433-52). “This scheme”, he says, “will provide you with an important means of determining the future” — and never mentions it again. At 2.466ff. is to be found the scheme of the *amantia* and the *insidiantia*, the signs which pay court to one another, or not. Again, it never recurs. These distinctions and doctrines are all “arabesques”, which have no significant part to play in the main overt purpose of such a treatise, the explanation of how to cast a horoscope, but demonstrate rather the superiority of the writer over others who do not, by implication cannot, deploy such niceties (Barton 1994, 134-42). The tendency towards systematisation of a “vulgate” was continually opposed by the zealous invention of individual variations, personal schemes and doctrines, such as the melothesia of *PMich.* 149 with which we began. Wolfgang Hübner has shown that, despite the high degree of repetition from one astrological source to another, if one compares all the treatises systematically, under the sole rubric of their classification of the zodiacal signs, one finds a bewildering variety of disagreement,

mostly very minor and apparently unmotivated (Hübner 1982, 45-299). For example, no two astrological treatises offer exactly the same classification of the signs between terrestrial, aquatic and amphibian (171-73). The writing of a treatise constitutes a tacit, and often enough, as in Manilius *Astron.* 3.1-42, an explicit, claim to personal mastery of the art.

But not all complexity is solely rhetorical, serving to enhance the impression of the writer's originality and knowledge. Some complications, the "intrinsic" type, serve to protect the system as a whole. They permit the over-production of means of generating astrological readings which is such a typical feature of the Graeco-Roman treatises, and surely therefore also of their Hellenistic antecedents. Manilius introduces one of these complications at 2.639-737, namely the zodiacal and planetary *dôdekatemoriai*. The first consists of a method of dividing each zodiacal sign into twelve sub-sections of $2\frac{1}{2}^\circ$, each allocated to one of the signs in reverse order.⁴⁸ The planetary dodekatemoria consists of a further subdivision into five of each of these arcs of $2\frac{1}{2}^\circ$, i.e. into units of $\frac{1}{2}^\circ$. Each unit is assigned to one of the five planets excluding Sun and Moon. The structural advantage of such a scheme is that it increases the number of factors to be taken into account by the astrologer in casting a nativity. The zodiacal sign gives one set of possible meanings read off from a prepared scheme of possibilities, e.g. the person born when the Sun is in Taurus is headstrong and bullish. The zodiacal dodekatemoria gives another possible influence, say Pisces, which influences the dominant meaning; and then the planetary dodekatemoria gives yet another possibility of influence, say Mercury. Other examples of "intrinsic" complexity are the "aspects" — the mutual influence of the planets conceived in geometrical relation to one another, one at least of which, the trine aspect, is Babylonian; the thirty-six decans — the segments of the Egyptian celestial circle; the *partes damnandae* — each of the 360° of the zodiac with its own special character; the *dôdekatropos* — the planetary "abodes"; the chronocratores that govern different stages of a person's life. The practical astrologer thus works within a formal paradigm of complete fixity and necessity, in fact with a system that gives him great freedom of manoeuvre in making predictions. But the rhetoric of the treatises dwells exclusively upon the formal paradigm, the "intrinsic" complexity serving to underscore the difficulty of the art.

Second, the tension between secrecy and didacticism. The historical location of astrology within temple contexts both in Babylonia and Egypt⁴⁹ gave it originally the status of an esoteric body of learning. The revelatory form of the astrological Hermetica, in which secrets are bestowed upon a "king" or other

figure of traditional authority, is appropriate to such an origin (Festugière 1950, 310-12). This secrecy was gradually challenged by the Greek political domination of Mesopotamia and the Nile valley: Berosus' account in his *Babyloniaka* of the "Chaldaean art" is a clear response to this challenge.⁵⁰ The transfer of technical astrological lore, by routes which are still wholly unclear, into the contestatory mode of Greek intellectual practice simultaneously increased the rate at which new schemes, extrinsic and intrinsic, could develop and created the demand for a new mode, the didactic, by means of which knowledge of the techniques could be transmitted other than through the laborious apprenticeship modes of the ancient Near-Eastern autocracies (cf. Gabba 1984, 16-18). The tension between the weight of tradition and the pressures of didacticism is evident in the oracular opacity, the despair of Vettius Valens who tried to read him, of one of the earliest writers of an astrological treatise, Critodemus.⁵¹ The very title of the book, *Horasis*, Vision, indicates the vatic mode;⁵² yet the citations by Vettius Valens and the surviving epitome (CCAG 8.3, 102) show both that he had created or elaborated numerous didactic schemes, of the zodiacal signs, planetary "rulers" and "aspects", climacterics, lengths of life, and so on, and that he stressed his own originality and competence (Boll 1922). In time, as Dorotheus' preface to his Book on "interrogations" (catarchic astrology) suggests, allusion to the "learned men of Babylon and Egypt" became a routine invocation of authority (5.1.3, p. 262 Pingree), but Manilius' metaphoric language of inwardness, depth, penetration and arduous search is evidence of the same ambivalence in slightly different language.⁵³

The third key feature of Hellenistic astrological treatises is the claim to precise and infallible knowledge. One of the fragments of Critodemus already reads, "After voyaging over oceans, after traversing great deserts, I was found worthy by the gods of chancing upon a safe haven, the one truly safe, *monês asphalestatês*, haven" (Vett. Val. *Anthol.* 3.12 Kroll = 3.8.3 p. 142.14-16 Pingree). A clear distinction between astronomy and astrology is not to be found before Sextus Empiricus *Math.* 5.1-2 (Hübner 1989, 19). The striking results of Babylonian and Greek astronomy provided the substance of the claim to objective knowledge required by the astrologers if they were to be able to promote their discourse over the traditional forms of divination practised by the ancient state. Cicero explains:

The Chaldaeans ... are considered to have established by protracted observation a science (*scientia*) of the stars, such that it became possible to predict what would happen to each individual, and the destiny each person was born with. (*Div.* 1.2)

Quintus later underscores the tradition of the extreme antiquity of Babylonian astronomical records (1.36). Still more pointed is Manilius' question (4.913-14):

an minus est sacris rationem ducere signis
quam pecudum mortes aviumque attendere cantus?⁵⁴

Extispicy and augury, the two props of Roman state divination, are represented as inferior to the scientific knowledge provided by the stars. In the proem, astrology is represented as the high point of human *ratio*, of its capacity to grasp "the innermost nature of the world in its causes", and to see "all that exists anywhere" (1.97-98) (Liuzzi 1990, 26-29). Astrology is above all an empirical science, the result of observations amassed over "long ages", which revealed the *potentia*, the peculiar influence, of each configuration of the stars (1.53-65).⁵⁵ And he naturally begins his treatise by summarizing, with Stoic glosses, the structure of the *sphaera* as established by Greek astronomy (1.255-804) (Liuzzi 1990, 32-33). It is precisely the scientific credentials of astrology that recommend its predictions (Flammini 1993). The value of this argument need not detain us here: what is of significance is that the appeal is made in these terms, which presume acknowledgement by Manilius' audience of the high status of Hellenistic astronomy. The appeal is to reason, not to authority or faith; to the idea of a Nature whose order has been written down.

3. Magic and astrology in the market-place

We come finally, and briefly, to consider the place of magic and astrology among the "conventional values" of the Hellenistic world.

My contention has been that our most promising sources of information about magic and astrology in this period are indeed shot through with conventional values, but that these are the values of a culture of bookishness, so that they are of very limited use as sources of information for belief or practice in the Hellenistic world as a whole. (The point certainly also holds for literary representations, such as Theocritus' second *Idyll*, the poem about a girl's attempt to force a faithless lover back to her by magic — suffused as it is by ironic distances between poet and subject, narrator and recipient.)⁵⁶ Both discourses are mainly concerned with the authority that their writers can claim in the Hellenistic marketplace of knowledge-practices.

Can we then say nothing of the sense in which magic and astrology may have formed part of the "conventional values" of the Hellenistic world, in the sense understood by the editors in their introduction to the volume? To a limited extent I think we can. My premise is that, just as there were to all intents no thorough-

going atheists in antiquity, so hardly anyone was thoroughgoingly sceptical of the possibility of magical effects and astral influences.⁵⁷ Moreover, I adapt Evans-Pritchard's notion (1937) of a hierarchy of means, which he deployed for the analysis of Azande divination but which may usefully be applied to magic too — that is, both “magic” and “divination” are really fields of action, covering many different types of practice and practitioner, notionally arranged in a hierarchy of prestige and efficacy. This hierarchy of means has two effects relevant in the present context: on the one hand it helps to prevent scepticism relating to individual incidents (i.e. disconfirmation) from corroding belief in the system as a whole; on the other, by leaving plenty of room for innovation especially in low-level practices, it permits the system to adapt to new circumstances and perceptions.

In the case of magic, we need to distinguish between the horizon of expectation which sustains the mere possibility of magical action, and actual recourse to a magical act or practitioner. Acceptance of the possibility of marvellous events, of which magical action is a small part, was simply an element of the Hellenistic *Lebenswelt*, one of the taken-for-granted background assumptions — eminently a conventional value. Plato, no friend of such claims, conceded: “As to all such matters (the power of incantations) the true facts are hard to learn, nor, if one could learn them, would it be an easy task to convince another” (*Leg.* 11.933a5-7). This commitment starts at the worst case of malign sorcery. As Pliny says, “There is no one who is not afraid of being ‘caught’ by malevolent curses” (*HN* 28.19, cf. Seneca, *Ben.* 6.35). The commitment extends to the point at which it meets the subject's sense of the absurd, ridiculous or abject, the private stock of images which convey the notion “superstition”.⁵⁸ Each person deploys a scale of conditions under which appeal to magic or a practitioner might be thinkable. If an individual had a bleeding nose he might try the recipe found in a collection of early mediaeval charms, and say “surgur” into the opposite nostril from that affected (*Additamenta pseudo-Theod.* p. 276.10 Rose). But if it did not work, he would not mind: his commitment to success somewhere higher up the scale of possibilities would not be impaired. Equally, another individual might find such a remedy ridiculous without that attitude extending to a general rejection of the possibility of magical effects — not that such effects could have been clearly defined or delimited by ordinary individuals in the Hellenistic world, since “magic”, whatever Greek word we choose as its best equivalent, remained inadequately distinguishable from the wider category of the marvellous, itself a main pillar of the religious *Lebenswelt*.

But, healing magic apart, recourse to a practitioner of one kind or another was

more or less problematical, because such a step offered a threat, slight or great, to one's good name and reputation. For recourse to serious magic, that is to a binding spell, is an admission that you cannot manage on your own (cf. Faraone 1991, 20; Winkler 1991, 226). A binding spell is one possible recourse in a restricted number of contexts of social action when all else has failed: many would never take that step, either because they had, though patronage and other social networks, more practical means of leverage; or from "shame", that is, a sense of what belonged to their good name. It is such shame, the refusal to "intimidate the timid", that Plato appeals to (*Leg.* 933b7-c3). For that reason, recourse to serious, especially love and binding (i.e. malign), magic must have been relatively uncommon; and I see no reason to suppose that individuals appealed to such magic more frequently in the Hellenistic period than in the Classical age or (for that matter) any other in Greece right up to the present. There is, at the very least, no documentary evidence for such an assumption: only a small number of curse tablets (*defixiones*) can be dated to the Hellenistic period — indeed, for what it is worth, there are probably more Athenian curse tablets dating from the later fourth century BC than from any other time.⁵⁹

Accusations of malign sorcery are a different matter: there is no necessary relation between the number of magical acts actually performed and the number of accusations. But even so, as far as I know, not a single trial for sorcery is known from the Hellenistic world (as opposed to the Roman Republic). It is generally assumed, on the basis of the apparent absence of such a title from Athenian law, that Hellenistic Greek cities wrote no laws against magical practice as such (Gernet 1951, xciv n. 2). On the one hand, it seems clear that at Athens, and probably elsewhere, an accusation of death caused by sorcery would generally fall under the rubric of death by poisoning — *pharmakeus*, fem. *pharmakis*, is a common word for a magical practitioner. Accusations of attempted harm by poisoning or sorcery (Plato mentions the placing of maumets at graves or thresholds, *Leg.* 933b1-3) would count as *blabê*, damage, which could of course be to farm livestock as well (cf. Saunders 1991, 318-19). The ambivalence, and especially the psychological orientation, of his entire treatment suggests that Plato is feeling his way. On the other hand, the Twelve Tables at Rome, an Archaic law code, did contain titles against magic: not against magic in general, but against specific acts of sorcery, in particular "stealing" a neighbour's crops — i.e. causing them mysteriously to fail (*XII Tab.* 8.8a = *FIRA*² 1.55). It seems to me by no means impossible that, although in the Greek cities "magic" was not a clear enough category to be sanctioned as such, many Hellenistic law-codes possessed specific rules of this kind. It was the harm caused by magical acts that was to be

sanctioned, not magic as such (Reverdin 1945, 237). And Plato certainly implies that in mid-fourth century Athens there were well-known recent cases of farmers who believed that their animals had been bewitched, as well as incidents in which maumets had been found. The difficulty for the court must always have been the issue of proof, the issue with which Plato opens his discussion.

The issue of astrology also needs differentiation. First, the documentary evidence for consultation of astrologers in the Hellenistic period is extremely meagre. The earliest papyrus horoscopes in Greek are for persons born between 50-1 BC (the earliest in fact for 10 BC), and there are only three of them; since the astronomical data listed in the horoscopes are all computed, the nominal date probably only reflects the popularity of astrology a generation later (Jones 1995, 31). The earliest surviving Deinotic ostrakon horoscope is for a birth in 38 BC; the earliest archaeological horoscope, for an occasion in 62 BC; the earliest literary horoscope, for a person born in 72 BC. One plausible reason for the absence of early horoscopes on papyrus is that, being at the bottom of the rubbish dumps where they were thrown, they sank below the water table and rotted away: there are very few Hellenistic papyri altogether. On the other hand there is indirect evidence for the success of Hellenistic astrology in the speed with which the authorities at Rome moved against it after its introduction by Manilius of Antioch (Pliny *HN* 35.199). Astrologers were expelled by the praetor peregrinus for the first time in 139 BC (Val. Max. 1.3.3; cf. Livy, *Per.* 54). And slightly earlier, Cato the Elder, who died in 149 BC, mentions the astrologer, *chaldaeus*, in a list of diviners whom a slave bailiff ought not to be permitted to consult (*Agr.* 1.5.4).⁶⁰

But it may be that we should make a relatively sharp distinction for the Hellenistic world between the two main forms of astrology, that is between genethliacal or natal astrology and catarchic astrology or “interrogations”. To be sure, genethliacal astrology is the main, often the sole, subject of the surviving treatises, because it was more difficult and involved more skill. But that emphasis may only tell us about the ideal priorities of their authors. It need not tell us what most clients wanted. I suggest that what they wanted, much more often than a natal horoscope, was a prediction of the success of an intended but risky venture, a journey, a law suit or a marriage, about the fate of a prisoner, the identity of a thief. These are the typical problems discussed by Dorotheus in the fifth book of the *Carmen astrologicum*, on catarchic astrology. Analogous to these concerns was the prediction of high-risk outcomes, such as the winners of chariot-races. Moreover, schemes obtained from meteorological phenomena, that went back ultimately to the Babylonian Enuma Anu Enlil series, and were also considered “astrology”, provided a form of prediction highly appropriate to the political

conditions of the Hellenistic kingdoms and *mutatis mutandis* the later Roman Republic, around which popular opinion could crystallize. That is, I suggest, the spread of astrology was initially the spread of an adjunct to the armoury of low-level, contingent, divinatory means available in the Graeco-Roman world. It was a new means of providing advice — not answers as the modern critics would have it, but advice — on routine daily issues involving risk and uncertainty.

Whereas in Graeco-Roman Egypt astrology was connected mainly with the temple, the art quite evidently lost this institutional context as it spread into the Hellenistic world. It entered into a market relationship to its clients. The low-level practitioners of astrology, that is, the great majority, drew upon the prestige of high-level practitioners, of the writers of treatises, in a word of literacy, astronomy and technical difficulty, to make a niche for themselves in the market place of divinatory means. The success of catarchic astrology presupposes the wide penetration into the urban populations of purely instrumental, anonymous social relationships, the growth of the cash-nexus and no doubt an increase in the number of risk-laden enterprises an individual might undertake. Catarchic astrologers could claim to be all that wise women, ecstasies, diviners, oracle-mongers, reliant upon older informal methods, were not. In fact, we might see catarchic astrology, analogous to the Hellenistic dice oracle, as a thoroughly “modern” phenomenon in the Hellenistic world, and in particular as an early form of that archetypal expression of capitalist rationality, risk-insurance.

The commodity sold, a prediction of whether a given risk is worth running or not, is far from cut-and-dried. The modern critics’ charge of irrationality is here, as in the similar case of modern newspaper horoscopes, particularly abstract. An example from Dorotheus will make the point: “If you find the benefics and malefics together in the ascendant or they aspect the ascendant, then know that this action will be middling with a mixture of good and evil in it” (5.2.5, p. 263 Pingree). Catarchic predictions could be negotiated with. They provided a limited frame of reference within which a pragmatic decision of whether to act or not could be made, in a wider context where real risks were often quite imponderable. Both sides, client and practitioner, thus had an interest in maintaining belief in the system. The “intrinsic” complexities of astrology protected both practitioner and client from the threat of disconfirmation.

Catarchic astrology was not only for the majority. The “coronation” horoscope for Antiochus I of Commagene (62 BC) on Nemrud Dağ suggests how kings might use such materials to bolster their legitimacy (Waldmann 1973, 151-52). But what of the social location of genethliacal astrology in the Hellenistic world outside Babylonia? The best guess is that it scarcely existed before the first century BC,

and that even then it was mainly for the rich. It surely is telling that the identity of Antiochus' astrologer is unknown, that there are no Hellenistic figures comparable to Ti. Claudius Thrasyllus and his son Balbillus, court astrologers to the Julio-Claudians.⁶¹ But for the eminent, or the would-be-eminent, genethliacal astrology had much to offer. They could use it to confirm their exceptional political and social position, or ape such status, by having heaven, through the medium of an astrologer, take a special interest in them. As natives, they could represent themselves as the privileged subjects of a divine drama, men simultaneously destined and free, but also potentially tragic men who could endure the suffering, misfortune and reverse which must some day come.⁶²

Saselberg 2, Ilmried
D-85304 Ilmmünster
Germany

Notes

- * I would like to thank Troels Engberg-Pedersen and Roger Beck for their critical comments on earlier drafts; Roger Beck and David Konstan kindly checked specific references for me.
- 1. I have tried to keep to this time-frame in choosing citations, but for this material the "Hellenistic period" used by other contributors, and by for example, J. Barnes et al. 1982, xix, stretching from 300 BC to AD 200, would make at least as much sense.
- 2. See the (incomplete) lists of authors and texts in Röhr, 1923-24, 56-57 and Festugière 1950, 197. The basic discussions of *ta phusika*, which we may loosely translate as "natural magic", remain Oder 1890, 70-77; Weidlich 1894, 13-35; Hammer-Jensen, 1924; Wellmann 1928 (also 1916; 1924); Festugière 1950, 186-216. Some important reservations concerning Wellmann's assumptions and methods, with regard to his related work on the Physiologus (1930), in Alpers 1984.
- 3. *PMich* 149, col.6.13-20, tr. Robbins. The papyrus is in a second-century AD hand, though its contents may well be earlier.
- 4. Cf. the accounts by Galbreath 1971 and Eliade 1976 of the modern occultic revival.
- 5. See also the remarks of Dale Martin elsewhere in this volume (110-27).
- 6. Cf. Carey 1992, 6: "Just because we now reject both magic and astrology as irrational is no grounds for assuming they were equated in any way in medieval thinking".
- 7. *HN* 30.2; cf. Garosi 1976, 18. It is also true that the Zoroastrian pseudepigrapha contain works both on natural magic and on astrology.
- 8. I include here figures such as Epigenes of Byzantium, Protagoras of Nicaea, Critodemus, Sudines (cf. Hübner 1988), or Seleucus of Seleucia, some of whom were also in our sense astronomers, e.g. the heliocentric theory of Seleucus. All are to be dated to the third and second centuries BC.
- 9. Cf. Fraser 1972, 1, 148-519 with notes.
- 10. "The book is one of the characteristic features of the Hellenistic world" (Pfeiffer 1978, 2, 132).
- 11. See Momigliano 1975; Kuhrt and Sherwin-White, 1987.
- 12. = FGrH 263T1 and F1 with commentary; cf. Kuhrt 1987, 545-46.

13. Wellmann's extensive discussion (1938) must, as usual, be used with caution. One main intermediary was probably Sudines (Kroll 1931).
14. Cf. Spoerri 1959, 105-7; W. and H.G. Gundel 1966, 45.
15. Astronomical procedure texts and ephemerides continued to be composed in cuneiform signs on clay tablets long after the alphabetisation of Mesopotamia (Oppenheim 1969, 125). Given the technical difficulties of these texts, Epigenes will have required competent native informants (Bowen and Goldstein 1988, 80).
16. Strab. 16.1.6; Pliny *HN* 6.121-25.
17. Oppenheim's view is cited by Reiner 1985, 592.
18. Democritus: Diog. Laert. 9.34-35 = Diels *Vorsokr.* 68A1, citing the two Hellenistic writers Antisthenes of Rhodes (FGrH 508 F12, second cent. BC) and Demetrius of Magnesia (first cent. BC); Ael. *VH* 4.20 = Diels 68A16; Hippol. *Haer.* 1.13 = Diels 68A40; Suda s.v. = Diels 68A2. Pythagoras: Diog. Laert. 8.3, with the parallel texts listed in Delatte's edition (p.105). It seems probable that the claim goes back at least to Aristoxenus of Tarentum (i.e. mid IVa) (frgs. 12-13 Wehrli). As a pair: Pliny *HN* 30.9; 25.23; cf. Cic. *Tusc.* 4.44; 55; *De Or.* 3.56.
19. Iambl. *Myst.* 8.1, p.195 des Places; the second figure is ascribed to Manetho.
20. Vettius Valens often refers to them as "the king and Petosiris"; in general, see Kroll 1935; Pingree 1974; also Festugière 1950, 88-186; W. & H.G. Gundel 1966, 10-36. The collection of texts ascribed to Nechepso and Petosiris by Rieß (1892) requires thorough revision.
21. The most judicious account, with full references to older literature, is to be found in Fraser 1972, 1, 440-44; a more indulgent one in Kingsley 1995, 325-28, 335-41. It is impossible to compile an agreed collection of Bolus' fragments, since so much depends upon one's judgment about his relation to the rest of the "Democritean" tradition (cf. Sbordone, 1940, xxi-xxix; Schmidt and Stählin 1948, 343; 346-47). The collection in Diels *Vorsokr.* 68 B300 was made under the direct influence of, or even by, Max Wellmann. His earlier collection of 82 fragments of the *Georgika* in 1921, 42-58 simply assumes that all "Democritean" passages on farming derive from Bolus.
22. Giannini speaks of Bolus' "hybrid and will o' the wisp character" (1964, 109).
23. The scholion on Nicander's *Theriaka* 764, calls him *ho Demokriteios*, the follower of Democritus (Diels *Vorsokr.* 68 B300.4). On the other hand, the first of the two Suda entries gives him the epithet *Pythagoreios*, a follower of Pythagoras (Diels *Vorsokr.* 68 B300.1).
24. *Democriti certe Chirocmeta esse constat*, "It is established that the *Chirocmeta* is definitely by Democritus": *HN* 24.160 = Diels *Vorsokr.* 68 B300.2.
25. Callimachus' provision of a Democritus-lexicon in his relevant *pinax* suggests that already he was aware of pseudo-Democritean books (Suda s.v. Kallimachos, ap. Diels *Vorsokr.* 68 A32, cf. Herter 1973, 188). But this must ante-date Bolus (contra Oder 1890, 73-74; Giannini 1964, 109). Pliny says of the supposed *Magika* of Democritus: "they are so deficient in credibility and every propriety that Democritus' admirers claim that these books are forgeries" (*HN* 30.9).
26. Deriving from Kroll 1934, 228.
27. Pliny, in an allusion to a parallel debate over a book by "Pythagoras" that some alleged had been written by Kleemporos, observes: "The very fact that an author of a book has judged it to be worthy of the great man, increases its authority" (*HN* 24.159).
28. The two titles are given as those of two separate books by the first Suda entry (Diels *Vorsokr.* 68 B300.1), cf. Giannini 1964, 109 n. 50. In his edition, Giannini seems in two minds about whether the book actually existed as a separate work (1966, 377 n. 1).

29. See Giannini 1964, 123 n.144 arguing against Ziegler 1949, 1153.36-1154.48; on the date: Ziegler, 1949, 1154.49-59; Giannini 1964, 122; Giannini 1966, 120.
30. *Anon. Rohdei*, ap. Diels *Vorsokr.* 68 B300.7a.
31. For Androtion, see esp. Theophr. *Caus.Pl.* 3.10.3-4 = Jacoby *FGrH* 324 F82; the bibliography is listed by Kingsley 1995, 299 n.34.
32. I differ here from recent emphasis upon the practical character of these writings (Beck 1991, 496-97; Kingsley 1995, 336-43).
33. See esp. Röhr 1923-24, 7-33; for *dunamis* in the Hippocratic writings, Plamböck 1964; also Souilhé 1919.
34. This is not the place to discuss either the relationship between the modern term (whatever it quite means) and possible ancient terms, nor between those ancient terms and actual practices. It will be enough to say that both issues are now under debate, cf. recently Faraone and Obbink (eds.) 1991; Meyer and Mirecki (eds.) 1995.
35. See Neugebauer 1942; Rochberg-Halton 1987, 1988, 1989.
36. The names of three Egyptian dream-interpreters, and three Egyptian scribes, *Musuraja*, appear in a Late Babylonian list of functions at the court in Nineveh (Oppenheim 1969, 100), so that the Babylonian influence on Egyptian omen texts of the XXVI Dynasty is hardly surprising (Parker 1959).
37. This was apparently Manilius' view, *Astron.* 1.40-64; Dorotheus claims to be "king of Egypt" and to be writing for his son Hermes (1.pr.2.; 5.1.1); cf. W. & H.G. Gundel 1966, 10-36 (with Pingree 1968); Barton 1994, 23-29.
38. At the same period the numerical tables (almanacs and ephemerides) required to prepare natal and catarchic horoscopes assimilate specifically Greek astronomical concepts.
39. On the complex issue of Manilius' sources, see in particular Abry 1983; Hübner 1993.
40. Goold 1977, xii; Liuzzi 1990, 11-15.
41. Different versions in *Man. Astron.* 2.856-967 (see fig. 13 in Goold 1977, lix); Paul. *Apoteles.* 14; Firmicus Maternus *Math.* 2.19-20 with P. Monat's notes (Budé).
42. In an obscure passage (2.856-63), Manilius attempts to explain the functioning of the temples more fully. There is a reciprocal relationship between stars and temples: each zodiacal sign and planet seems both to influence any temple it happens to enter, and to receive influences from it.
43. *Palmamque petens victrixque priorum / altius insurgit*, "seeking the prize and rising triumphantly above the earlier (temples)" (2.883-84).
44. *Astron.* 2.905-09; cf. Firm. Mat. *Math.* 2.19.10.
45. *Astron.* 2.929-38. Firmicus does not mention Saturn, but lists *parentes, patrimonium, substantiam, fundamenta, mobilia, et quicquid ad latentes et repositas patrimonii pertinet facultates*, "parents, (heritable) estates, property, substructures, chattels-personal, and anything to do with concealed or stored (i.e. hidden) wealth" (*Math.* 2.19.5).
46. The same scheme appears in the *Liber Hermetis trismegisti* p. 50.5-12 Gundel. Abry has attractively suggested that the two schemes go back to more primitive Hellenistic divisions of the horoscopal circle (1983, 55).
47. Bouché-Leclercq 1899, although in many details out-dated, remains the indispensable exposition of Graeco-Roman astrological doctrines.
48. This is certainly an originally Babylonian scheme (Rochberg-Halton 1988).
49. Oppenheim 1969; Rochberg-Halton 1993; Cumont 1937; Baccani 1989: 67-69; Jones 1995.
50. Schnabel 1923, 20 rightly maintained that Berossus' account of Chaldaean lore formed part of the *Babyloniaka*. Jacoby prints the accounts of Berossos the astrologer under (Pseudo-) Bero(s)os, *FGrH* 680 F15-22b.

51. Generally dated to the late third century BC, but this is a guess based on the list of early astrologers in Firm. Mat. *Math.* 4.proem.5 (2.127 Monat) (W. & H.G. Gundel 1966, 106).
52. Vett. Val. *Anthol.* 3.12 Kroll = 3.8.3, p. 142.12 Pingree; 9 pr. = 9.1.5, p. 316.
53. Note especially the numerous metaphors of the poem, 1.1-117, but also passages such as 2.137-49, where his poem is to be heard not by crowds of men but by the heavens alone. For the language of mysticism still in later astrologers, see Scott 1995, 114.
54. "Is it less valid to see coherent meaning in the stars, which are divine, than to pay attention to sacrificial animals and bird-calls?"
55. It has been suggested that the rôle of accumulating (dissonant) theories or schemes from earlier sources in each treatise is to indicate the antiquity — one might add also the depth, inventiveness and fecundity, all goods of a rhetorical education — of the art (Abry 1983, 52).
56. Goldhill, 1991, 261-72.
57. Cf. Dale Martin in this volume (110-27). For ancient criticism of astrology, Long 1982; Ioppolo 1984. Carey aptly observes of the medieval period: "The principle of celestial influence remained entrenched in the minds of the most 'rational' critics [of astrology]" (1992, 13).
58. Cf. Martin, 110-27 in this volume.
59. Richard Wünsch notoriously dated the bulk of his *Attic defixiones* to the Hellenistic period on the basis of inadequate comparison of the letter forms with those of public inscriptions (1897, 2). Wilhelm argued (1904) on the basis of the names that many of them were more likely to belong to the fourth century BC. The texts themselves have now mostly disappeared; but Ziebarth's later texts (1934) and some others (Faraone 1991, 30 n. 76) serve to support Wilhelm.
60. See also the other evidence collected by Cramer 1954, 44-50.
61. Sudines in the absurd story about Attalus I of Pergamum in Polyacnus *Strat.* 4.20, cf. Frontin. *Str.* 1.11.15, is represented as a hepatoscopist, not a court astrologer.
62. Cf. Achilles Tatius 1.3.2-4, cited by Konstan in this volume, p. 175 n. 39. Eliade attributes an analogous, though by now banal, "parareligious" function to the modern occult: "You admit, consciously or unconsciously, that a grand, though incomprehensible, cosmic drama displays itself and that you are part of it; accordingly, you are not *de trop*" (1976, 61).

Bibliography

- Abry, J-H. 1983. "L'Astrologie à Rome: les *Astronomiques* de Manilius", *Pallas* 30, 49-61.
- Alpers, K. 1984. "Untersuchungen zum griechischen Physiologus und den Kyraniden", *Vestigia Bibliae* 6, 13-87.
- Baccani, D. 1989. "Appunti per oroscopi negli ostraca di Medinet Madi", *AnPap* 1, 67-77.
- Barnes, J., Brunschwig, J., Burnyeat, M. & Schofield, M. (eds.) 1982. *Science and Speculation: Studies in Hellenistic theory and practice*. Cambridge/Paris.
- Barnes, T.D. (ed.) 1995. *The Sciences in Greco-Roman Society* (Apeiron 27,4). Edmonton.
- Barton, T. 1994. *Ancient Astrology*. London/New York.
- Beagon, M. 1992. *Roman Nature: the thought of Pliny the Elder*. Oxford.
- Beck, R.L. 1991. "Thus spake not Zarathustra: Zoroastrian pseudepigrapha of the Greco-Roman world", in: Boyce & Grenet, 1991, 491-565.
- Bidez, J. & F. Cumont 1938. *Les Mages hellénisés: Zoroastre, Ostanès et Hystaspe d'après la tradition grecque*. Paris.

- Bilde, P. 1993. "Jesus and Paul: a Methodological Essay on two Cases of Religious Innovation in the Context of Centre-Periphery Relations", in: Bilde et al. (eds.), 1993, 316-38.
- Bilde, P., Engberg-Pedersen, T., Hannestad, L., Zahle, J. & K. Randsborg (eds.) 1993. *Centre and Periphery in the Hellenistic World*. (SHC 4). Aarhus.
- Boll, F. 1922. s.v. Kritodamos (4), in: *RE* 11, 1928-30.
- Bouché-Leclercq, A. 1899. *L'Astrologie grecque*. Paris.
- Bourdieu, P. 1971. "Genèse et structure du champ religieux", *RevFSoc* 12, 295-334.
- Bowen, A.C. & B.R. Goldstein 1988. "Meton of Athens and Astronomy in the late fifth century BC", in: E. Leichty et al. (eds.) 1988, 39-81.
- Boyce, M. & F. Grenet 1991. *A History of Zoroastrianism, 3: Zoroastrianism under Macedonian and Roman Rule*. (Handbuch der Orientalistik I.8.i.2.2). Leiden.
- Burkert, W. 1987. *Ancient Mystery Cults*. Cambridge, Mass./London.
- Carey, H.M. 1992. *Courting Disaster: Astrology at the English Court and University in the Later Middle Ages*. Basingstoke.
- Cavallo, G. 1983. "Alfabetismo e circolazione del libro", in: Vegetti (ed.) 1983, 166-86.
- Cramer, F.H. 1954. *Astrology in Roman Law and Politics*. (MemAPhilSoc 37). Philadelphia.
- Cumont, F. 1937. *L'Égypte des astrologues*. Brussels.
- Delatte, A. 1938. *Herbarius. Recherches sur le cérémoniel usité chez les anciens pour la cueillette des simples et des plantes magiques* (2nd ed.). (Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège 71). Liège.
- Diels, H. 1920. *Antike Technik* (2nd ed.). Berlin.
- Dodds, E.R. 1951. *The Greeks and the Irrational* (Sather Classical Lectures 25). Berkeley/Los Angeles.
- Eliade, M. 1976. "The Occult and the Modern World", in: Eliade, M., *Occultism, Witchcraft and Cultural Fashions: Essays in Comparative Religions*, 47-68. Chicago.
- Evans-Pritchard, E.E. 1937. *Witchcraft, Oracles and Magic among the Azande*. Oxford.
- Faraone, C.A. 1991. "The Agonistic Context of Early Greek Binding Spells", in: Faraone & Obbink (eds.) 1991, 3-32.
- Faraone, C.A. & D. Obbink (eds.) 1991. *Magika Hiera: Ancient Greek Magic and Religion*. New York/Oxford.
- Festugière, A.-J. 1950. *La révélation d'Hermès Trismégiste, 1: l'astrologie et les sciences occultes* (2nd ed.). Paris.
- Flammini, G. 1993. "Manilio e la 'sollertia' nelle storia delle acquisizione tecnico-scientifiche: *Astron. praef.* 66-95", in: D. Liuzzi (ed.) 1993, 185-94.
- Fraser, P.M. 1972. *Ptolemaic Alexandria*. Oxford.
- Gabba, E. 1984. "Scienza e potere nel mondo ellenistico", in: Giannantoni & Vegetti (eds.) 1984, 13-37.
- Galbreath, R. 1971. "The History of Modern Occultism: a Bibliographical Survey", *JPCult* 5, 726-54.
- Galter, H.D. (ed.) 1993. *Die Rolle der Astronomie in den Kulturen Mesopotamiens*. (Grazer Morgenländische Studien 3). Graz.
- Garosi, R. 1976. "Indagine sulla formazione del concetto di magia nella cultura romana", in: Xella (ed.) 1976, 13-93.
- Gernet, L. 1951. "Introduction", in: *Platon, Oeuvres complètes* (Budé) 11, xciv-ccvi. Paris.
- Giannantoni, A. & M. Vegetti (eds.) 1984. *La scienza ellenistica. Atti delle 3 Giornate di Studio tenutesi a Pavia, 14-16 Aprile 1982*. (Elenchos 9 [Pavia]).
- Giannini, A. 1964. "Studi sulla paradossografia greca, 2: da Callimaco all'età imperiale — la letteratura paradossografica", *Acme* 17, 99-140.

- Giannini, A. 1966. *Paradoxographorum graecorum reliquiae*. (Classici greci e latini, sez. Testi e Commenti 3). Milano.
- Goldhill, S.D. 1991. *The Poet's Voice: Essays on Poetics and Greek Literature*. Cambridge.
- Goold, J.P. (ed., trans.) 1977. *Manilius, Astronomica*. Cambridge, Mass./London.
- Gordon, R.L. 1987. "Aelian's Peony: the location of magic in Graeco-Roman tradition", in: *Comparative Criticism: A Yearbook* (E.S. Shaffer ed.) 9, 59-95. Cambridge.
- Grafton, A. 1992. *Fälscher und Kritiker: der Betrug in der Wissenschaft* (Kleine Kulturwiss. Bibliothek 32). Berlin. (Original title: *Forgers and Critics: Creativity and Duplicity in Western Scholarship*, Princeton 1990).
- Green, P. 1990. *From Alexander to Actium: the Hellenistic Age*. London.
- Greenfield, J.C. & M. Sokoloff 1989. "Astrological and related omen texts in Jewish Palestinian Aramaic", *JNES* 48, 201-14.
- Gundel, W. & H-G. Gundel 1966. *Astrologumena: die astrologische Literatur in der Antike und ihre Geschichte*. (Sudhoffs Archiv, Beiheft 6). Wiesbaden.
- Hammer-Jensen, I. 1924. s.v. Demokritos (Pseudo-Demokrit), in: *RE Suppl.* 4, 219-23.
- Harris, W.V. 1989. *Ancient Literacy*. Cambridge, Mass./London.
- Herter, H. 1973. s.v. Kallimachos 6, Nachtrag, in: *RE Suppl.* 13, 184-266.
- Hübner, W. 1982. *Die Eigenschaften der Tierkreiszeichen in der Antike: ihre Darstellung und Verwendung unter besondere Berücksichtigung des Manilius*. (Sudhoffs Archiv, Beiheft 22). Wiesbaden.
- Hübner, W. 1988. "Zum Planetenfragment des Sudines, P. Genv. inv. 203", *ZPE* 73, 33-42.
- Hübner, W. 1989. "Die Begriffe 'Astrologie' und 'Astronomie' in der Antike", *AbhMainz* 1989, 7. Wiesbaden.
- Hübner, W. 1993. "Manilio e Teucro di Babilonia in Manilio", in: D. Liuzzi (ed.) 1993, 21-40.
- Hughes, G.R. 1951. "A Demotic Astrological Text", *JNES* 10, 256-64.
- Ioppolo, A.M. 1984. "L'astrologia nello stoicismo antico", in: Giannantoni & Vegetti (eds.) 1984, 73-91.
- Jones, A. 1995. "The Place of Astronomy in Roman Egypt", in: T.D. Barnes (ed.) 1995, 25-51.
- Kingsley, P. 1995. *Ancient Philosophy, Mystery, and Magic: Empedocles and Pythagorean Tradition*. Oxford.
- Kroll, W. 1931. s.v. Sudines, in: *RE* 4A, 563.
- Kroll, W. 1934. "Bolos und Demokritos", *Hermes* 69, 228-32.
- Kroll, W. 1935. s.v. Nechepso, in: *RE* 16, 2160-67.
- Kuhrt, A. 1987. "Assyrian and Babylonian traditions in classical authors: a critical synthesis", in: Nissen & Renger (eds.) 1987, 539-53.
- Kuhrt, A. & S. Sherwin-White (eds.) 1987. *Hellenism in the East: the interaction of Greek and non-Greek civilizations from Syria to central Asia after Alexander*. London.
- Laurenti, R. 1985. "La questione Bolo-Democrito", in: *L'atomo fra scienza e letteratura*, 12 *Giornate filologiche genovesi*, 20-1 Febbraio 1984. (Pubbl. dell'Ist. di filol. class. e med. dell'Univ. di Genova 91), Genova, 75-106.
- Leichty, E., Ellis, M. de J. & Gerardi, P. (eds.) 1988. *A Scientific Humanist: Studies in Memory of Abraham Sachs*. (Occasional Publ. of the Samuel Noah Kramer Fund 9). Philadelphia.
- Liuzzi, D. 1990. *M. Manilio, Astronomica I*. Lecce.
- Liuzzi, D. (ed.) 1993. *Manilio fra poesia e scienza: Atti del convegno, Lecce 14-16 Maggio 1992*. Leccc/Catalina..
- Lloyd, G.E.R. 1979. *Magic, Reason and Experience: Studies in the origins and development of Greek science*. Cambridge.

- Lloyd, G.E.R. 1983. *Science, Folklore and Ideology: Studies in the Life Sciences in Ancient Greece*. Cambridge.
- Lloyd, G.E.R. 1987. *The Revolutions of Wisdom: Studies in the Claims and Practice of ancient Greek science*. (Sather Classical Lectures 52). Berkeley/Los Angeles.
- Long, A.A. 1982. "Astrology: arguments pro and contra", in: J. Barnes et al. (eds.) 1982, 165-92.
- McIntosh, C. 1972. *Eliphas Lévi and the French Occult Revival*. London.
- Martini, M.C. 1977. *Piante medicamentose e rituali magico-religiosi in Plinio*. (Biblioteca di Cultura 125). Roma.
- Meyer, M. & P. Mirecki (eds.) 1995. *Ancient Magic and Ritual Power*. Leiden.
- Momigliano, A. 1975. *Alien Wisdom: the limits of Hellenization*. Cambridge.
- Müller, C.W. 1965. "Die Heilung 'durch das Gleiche' in den hippokratischen Schriften *De morbo sacro* und *De locis in homine*", *Sudhoffs Archiv f. Geschichte der Medizin u. Naturwissensch.* 49, 225-49.
- Neugebauer, O. 1942. "On some astronomical Papyri and related Problems of ancient Geography", *TAPhSoc* n.s. 32, 251-63.
- Neugebauer, O. 1949. "The Astronomical Treatise P. Ryl. 27", *Det Kongelige Danske Videnskabernes Selskab. Historisk-filosofiske Meddelelser* 32,2. Copenhagen.
- Nilsson, M.P. 1961. *Geschichte der griechischen Religion* (2nd ed.). (HAW 5.2.2). München.
- Nissen, H.J. & J. Renger (eds.) 1987. *Mesopotamien und seine Nachbarn: Politische und kulturelle Wechselbeziehungen im alten Vorderasien vom 4. bis 1. Jahrtausend v. Chr.* (2nd ed.). (Berliner Beiträge zum Vorderen Orient 1). Berlin.
- Oder, W. 1890. "Beiträge zur Geschichte der Landwirtschaft bei den Griechen", *RhM* 45, 70-77.
- Oder, W. 1910. s.v. Geoponica, in: *RE* 7, 1221-25.
- Oppenheim, A.L. 1959. "A new Prayer to the 'Gods of the Night'", *AnalectaBibl* 12, 282-301.
- Oppenheim, A.L. 1969. "Divination and celestial observation in the Last Assyrian Empire", *Centaurus* 14, 97-135.
- Parker, R.A. 1959. *A Vienna Demotic Papyrus on Eclipse and Lunar Omina*. (Brown Egyptological Studies 2). Providence.
- Piccaluga, G. 1987. "La mitizzazione del Vicino Oriente nelle religioni del mondo classico", in: Nissen & Renger (eds.) 1987, 573-612.
- Pingree, D. 1968. Review of W. & H.G. Gundel 1966, *Gnomon* 40, 276-80.
- Pingree, D. 1974. s.v. Petosiris, *Dictionary of Scientific Biography* 10, 547-49.
- Pingree, D. 1987. "Mesopotamian astronomy and astral omens in other civilizations", in: Nissen & Renger (eds.) 1987, 613-31.
- Pfeiffer, R. 1978. *Geschichte der klassischen Philologie* (2nd ed.). München.
- Plamböck, G. 1964. "Dynamis im Corpus Hippocraticum", *AbhMainz* 1964, 2. Wiesbaden.
- Reiner, E. 1985. "The uses of astrology", *JAOS* 105, 589-95.
- Reverdin, O. 1945. *La Religion de la cité platonicienne* (École française d'Athènes, Travaux et Mémoires 6). Paris.
- Rieß, E. 1892. "Nechepsonis et Petosiridis fragmenta magica", *Philologus Supplb.* 6 (1891-93), 325-94.
- Rieß, E. 1894. s.v. Aberglaube, in *RE* 1, 30-93.
- Rochberg-Halton, F. 1987. "TCL 6.13: Mixed Traditions in late Babylonian Astrology", *ZDMG* 77, 207-28.
- Rochberg-Halton, F. 1988. "Elements of the Babylonian contribution to Hellenistic astrology", *JAOS* 108, 51-62.
- Rochberg-Halton, F. 1989. "Babylonian horoscopes and their sources", *Orientalia* 58, 102-23.

- Rochberg-Halton, F. 1993. "The Cultural Locus of Astronomy in Late Babylonia", in: Galter (ed.) 1993, 31-45.
- Röhr, J. 1923-24. "Der okkulte Kraftbegriff im Altertum", *Philologus Supplb.* 17, 1-95. Leipzig.
- Sachs, A. 1967. "La naissance de l'astrologie horoscopique en Babylonie", *Archéologia* (Paris) 15, 13-19.
- Saunders, T.J. 1991. *Plato's Penal Code: Tradition, Controversy and Reform in Greek Penology*. Oxford.
- Sbordone, F. (ed.) 1940. *Hori Apollinis, Hieroglyphica*. Napoli.
- Schmidt, W. & O. Stählin 1948. *Geschichte der griechischen Literatur bis auf die Zeit Justinians* 1.5. (HAW 7.1.5). München.
- Schnabel, P. 1923. *Berosos und die babylonisch-hellenistische Literatur*. Leipzig.
- Scott, A.B. 1995. "Churches or Books? Sethian Social Organization", *JEarlyCst* 3, 109-22.
- Souilhé, J. 1919. *Étude sur le terme δύναμις dans les dialogues du Platon*. Paris.
- Spoerri, W. 1959. *Späthellenistische Berichte über Welt, Kultur und Götter*. Basel.
- Vegetti, M. (ed.) 1983. *Oralità, scrittura, spettacolo*. Torino.
- Waldmann, H. 1973. *Die kommagenischen Kultreformen unter König Mithradates I. Kallinikos und seinem Sohne Antiochos I* (EPRO 34). Leiden.
- Weidlich, T. 1894. *Die Sympathie in der antike Literatur*. Stuttgart.
- Weidner, E.G. 1967. "Gestirn-Darstellungen auf babylonischen Tontafeln", *AbhWien, phil.-hist. Klasse* 1967.2. Wien.
- Wellmann, M. 1916. "Pamphilos", *Hermes* 51, 1-64.
- Wellmann, M. 1921. "Die Georgika des Demokritos", *AbhBerlin, phil.-hist. Klasse* 4. Berlin.
- Wellmann, M. 1924. "Beiträge zur Quellenanalyse des älteren Plinius", *Hermes* 59, 129-56.
- Wellmann, M. 1928. "Die Φουσκὰ des Bolos-Demokritos und der Magier Anaxilaos aus Larissa, 1", *AbhBerlin, phil.-hist. Klasse* 7. Berlin.
- Wellmann, M. 1930. "Der Physiologus: eine religionsgeschichtlich-naturwissenschaftliche Untersuchung", *Philologus Supplb.* 22,1. Leipzig.
- Wellmann, M. 1938. "Die Stein- und Gemmenbücher der Antike", *Quellen und Studien zur Geschichte der Naturwissenschaften und der Medizin* 4:4, 86-149.
- Wilhelm, A. 1904. "Über die Zeit einiger attischen Fluchtafeln", *ÖJh* 7, 105-26.
- Winkler, J.J. 1991. "The Constraints of Eros", in: Faraone & Obbink (eds.) 1991, 214-43.
- Wünsch, R. 1897. *Defixionum Tabellae*. IG III, 3, Appendix. Berlin. (Cited here from the reprint, *Inscriptiones Atticae, Supplementum Inscriptionum Atticarum*, 1 [Chicago 1976]).
- Xella, P. (ed.) 1976. *Magia: studi di storia delle religioni in memoria di Raffaella Garosi*. Rome.
- Ziebarth, E. 1934. "Neue Verfluchungstafeln aus Attika, Boiotien und Euboia", *SBBerlin* 33, 1022-55.
- Ziegler, K. 1949. s.v. Paradoxographoi, in: *RE* 18.3, 1137-66.