INFERENCE FROM SIGNS
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Inference from Signs

Ancient Debates about the Nature of Evidence

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FOR MY PARENTS
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Abbreviations

CAG Commentaria in Aristotelem Graeca
CMG Corpus Medicorum Graecorum
DG Doxographi Graeci, ed. H. Diels
DK Die Fragmenta der Vorsokratiker, ed. H. Diels and W. Kranz
D.L. Diogenes Laertius
K Galeni Opera Quae Exstant, ed. K. G. Kühn (cited by volume, page, and line)
S.E. M. Sextus Empiricus, Adversus mathematicos
S.E. PH Sextus Empiricus, Πυρρώνειοι ύποτυπώσεις (Outlines of Pyrrhonism)
SVF Stoicorum Veterum Fragmenta, ed. H. von Arnim
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Introduction

1. The Scope of the Enquiry

Evidence has been used to draw inferences for as long as there have been human beings. The aim of the present enquiry is to explore some of the more important attempts that were made to understand the nature of evidence after it became an object for theoretical reflection in the ancient Greek and Roman world. Although the word is an ancient one, the nature of evidence was not discussed under the head of ‘evidence’ in antiquity. Cicero introduced evidentia as a rendering of ἐνάργεια, the quality of being evident (Luc. 17). In this sense it entered European languages, including English, where, however, one tends to speak of ‘self-evidence’ because English uniquely recognizes the sense of ‘evidence’ at issue in this enquiry, viz. an item that is the basis of an inference or the ground for a conclusion. The relation between the two senses seems to be this: to serve as evidence for a conclusion, apart from supporting it, an item must be evident, or at least more evident than the conclusion. Only in this way can it permit us to infer a conclusion that we do not know from grounds that we do, thus adding to our stock of knowledge.

The term which was used most frequently in antiquity, and by which we shall for the most part be guided in this enquiry, was ‘sign’ (σηµεῖον, signum), though in order to do justice to the extent of ancient interest in evidence and its uses we shall also have to attend to other expressions such as ‘token’ (τεκηµήριον). The idea of inference from signs was well entrenched in the ancient Greek world, as we can see from remarks in early oratorical literature¹ and tragedy² to the effect that signs or tokens must be used to discover or make clear what is unknown. The extent to which tragedians themselves relied upon signs to produce the recognitions on which tragic plots rely is suggested by Aristotle’s remark that the most

¹ See Hyperides fr. 195 Blass; Antiphon, fr. 72 Blass; Andocides 3. 2.
² See Sophocles, OT 916; Euripides, frr. 574, 811 Nauck. We owe these fragments and Hyperides fr. 195 to Clement of Alexandria’s interest (Stromata, 6. 2).
Introduction

common and least artful method of bringing about recognition is by signs; he gives as an example Odysseus’ recognition by his nurse from a scar (Po. 16, 1454b20 ff.). Historians concerned to put their conclusions on sound evidential foundations also employed the vocabulary of signs. Herodotus notoriously argued that the length and path of the Nile correspond to those of the Danube, ‘inferring by means of visible evidence the unknown’ (2. 33). Thucydides, having begun by reporting his inference (τεκµαιρόµενος) from the preparations he witnessed before it began that the war whose history he is about to relate would be the greatest in human history, proceeds, in the Archaeology, to support his contention by appeal to signs from which the smaller scale of earlier conflicts can be inferred (1. 20–1). He also famously remarked on the danger of mistaking for an exact sign (ἀκριβὲς σηµεῖον) one that is not: consider, he suggests, the mistaken conclusions about the relative power of Athens and Sparta to which future observers would be led by the ruins they have left behind (1. 10).

And the basic idea of sign-inference can also be conveyed without any special reference to ‘signs’ or ‘tokens’. Aristotle remarks that it is necessary to use visible things as witnesses for the invisible (EN 2. 2, 1104a13–14; cf. EE 1. 6, 1216b26–8). The authors of the Hippocratic corpus speak often of the need to learn or investigate what is hidden from or on the basis of what is manifest (Vict. 1. 11–12; cf. VM 22). But perhaps the most suggestive statement of the principle is Anaxagoras’ dictum: ‘the phenomena are the vision of the non-evident’ (S.E. M. 7. 140=B 21a DK).

The use of signs as evidence for theories in natural philosophy, which Anaxagoras has in view here, was to prove especially important in stimulating reflection. For it is in this field that inference

3 ἀναγνώρισις διὰ τῶν σηµείων.
5 συµβάλλοµαι τοῖσι ἐµφανέσι τὰ µὴ γινωσκόµενα στωµαιρόµενος. This is not what we should call history, but cf. 1. 57; 2. 43, 58, 104; 3. 38; 7. 238; 9. 100.
6 ὡσὶ τῶν ἀδήλων τὰ φαινόµενα. According to Sextus, this dictum also met with the approval of Democritus. The practice of viewing the grasp of the non-evident won by inference as a kind of sight is also attested in the Hippocratic treatise De arte, ch. 11, where the vision of the eyes is contrasted to that of the mind (ὁψις τῆς γνώµης), and it lives on in the expression τὰ λόγια τιθεωρητά. On the meaning of the phrase itself in historical context see Diller, ‘Οψις ἀδήλων’; G. E. R. Lloyd, Polarity and Analogy: Two Types of Argumentation in Early Greek Thought (Cambridge: Cambridge University Press, 1966), 338–41; and J. Barnes, The Presocratic Philosophers, 2nd edn. (London: Routledge, 1982), 538, 644 n. 5.
from signs promised the most by extending knowledge beyond what is directly given in experience to embrace both regions beyond the reach of observation and the hidden underlying nature of reality. Diogenes of Apollonia calls the facts to which he appeals in support of his contention that air is the first principle of all existing things ‘mighty signs’ (μεγάλα σημεία) (B 4 DK). In another early philosophical expression of the principle, Alcmaeon speaks of inference from tokens (B 1 DK). The Socrates of Aristophanes’ satirical portrait in the Clouds infers a natural explanation for thunder from signs in the manner of Presocratic philosophy, instead of adhering to traditional explanations in terms of the agency of Zeus (Nub. 369). And it is to this practice that Gorgias alludes in his defence of Helen when he cites the ability of natural philosophers to convince us first of one opinion about non-evident matters and then another in support of his contentions about the persuasive power of logos (Hel. 13).

But the ancient term ‘sign’ was not confined to items that furnish evidence from which a conclusion is inferred any more than ours is. Signals of all sorts and words were also called signs. Augustine’s celebrated discussion shows how wide was the range of things the ancients were willing to call signs. Writing in late antiquity, after the period with which we shall be concerned, he succeeded in producing an account that casts its net wide enough to capture pretty much everything that can be regarded as a sign (De doctrina Christiana 2. 1. 1): ‘A sign is a thing which brings it about by itself that something different apart from the impression it makes on the senses comes to mind.’ An item is a sign, then, through standing in a relation of a certain kind to a distinct item. This is the point of Augustine’s contrast between signs and things. The distinction is between two aspects of the same item rather than between two exclusive kinds, for though not every thing need be a sign, every sign is, in addition to being a sign, also a thing. To regard a sign as a thing is to attend to features it possesses in abstraction from the use to which it is put as a sign, whereas to regard it as a sign is to view

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8 Signum est enim res præter speciem, quam ingerit sensibus, aliud aliquid ex se faciens in cogitationem venire.
it in the context of a relation that obtains between it and what it signifies (cf. Augustine, *De dialectica* 5). As Augustine’s definition makes plain, whatever else we may wish to say about this relation, when grasped by the intellect, it supports a mental transition from sign to signified item.

These signifying relations are of many different kinds, however, some of which have nothing to do with inference. But the distinction Augustine immediately goes on to draw between natural and given signs brings us a step closer to the use of signs as evidence. Given signs crucially involve the intention to convey a meaning, an intention which must be grasped by the recipient of the sign if it is to succeed in discharging its communicative function.\(^9\) Augustine introduces this distinction in order to prepare the way for his interpretation of Scripture as a system of divinely given signs, and therefore touches only very briefly on natural signs (2. 2. 3).\(^10\) These he describes as those which signify in the absence of the intention essential to given signs (2. 1. 2). He presents a number of paradigmatic instances to illustrate natural signification—smoke as a sign of fire, a track as the sign of an animal’s passage, and a facial expression as the sign of an affection of the soul—but says nothing about the relation or relations in virtue of which they signify the conclusions for which they furnish evidence.

But questions about the use of signs as evidence that were not at the centre of Augustine’s concerns had been the object of much attention before his time. Before saying something about the different positions on offer in antiquity and their defenders, however, it will be useful to touch on some complicating factors that we have so far neglected. The distinction between natural and given signs has a great deal of intuitive plausibility to recommend it. But it is possible to imagine, and as we shall see, to find, conceptions of the signifying relation whose effect is to undermine this contrast in one way or another or to require that it be understood in a different way. Thus one position we shall consider, that of the Stoics, treats a large part of natural signs, or the signs we should be inclined to call natural, as

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\(^10\) Signa divinitus data, quae scripturis sanctis continentur.
a result of the providential order of nature, intended by God to serve humankind as signs. The effect of this view is to assimilate natural to given signs, though there is room for disagreement about whether such signs depend for their effect on the sign-giver’s intention being grasped in the same way. Assimilation in the opposite direction is also possible, e.g. by treating a speaker’s remarks as grounds or evidence that things are as the speaker says they are, evidence whose value depends on facts about the reliability of speakers in general or this speaker in particular, and the like.

The position of the medical Empiricists, which will occupy a large part of our attention, questions the framework we have so far relied upon at a still deeper level, however. Up to this point I have appealed freely to notions like evidence, inference, grounds for a conclusion, and the like to clarify the use of signs in which I am interested. But if to make an inference is to perform a mental act that crucially involves the grasp of the relation of justification holding between a conclusion and the grounds or evidence supporting it, a relation that can be formulated as an argument, which in turn invites evaluation as valid or invalid, then some participants in the debate will have denied that they were concerned with inferences at all. Nor will it help to distinguish between deductive and inductive forms of inference. Adherents of the Empirical view in question were thoroughgoing anti-rationalists who denied that the use of signs is a form of reasoning in which signs are taken as evidence furnishing a reason for a conclusion. In place of this narrowly inferential, or broadly rational, picture they seem to have put a roughly mnemonic conception of signification as a matter of being put in mind of the signified item by the sign. On their view, the ability to use signs is not a matter of reasoning, at least reasoning understood in a certain way, but depends rather upon dispositions to be reminded of associated items. And on this view too the difference between natural and given signs tends to recede. Something like Augustine’s distinction can still be drawn, but the half corresponding to natural signs will have to be explained in different terms (cf. S.E. M. 8. 193, 200–1). To accommodate this view it will sometimes be necessary in what follows to construe talk of ‘sign-inference’ generously enough to cover ways of understanding the use of signs which would not, on a narrower or more familiar construction, count as inferring at all. To infer a conclusion from signs in this way is no longer a matter of grasping or appreciating
a relation between sign and signified that obtains independently of the person drawing the inference. Rather, this kind of sign-inference depends on a relation of association formed somehow in the memory of the person drawing the inference.

Since the questions with which we shall be occupied were chiefly discussed under the head of ‘signs’ and ‘sign-inference’, we should also be alert to a widespread though not universal semantic tendency in the ancient use of these terms. Inferences and the grounds on which they are based can be distinguished into kinds according to several different principles. One can, for example, oppose inferences that serve the purpose of theory construction, e.g. in natural philosophy, to those serving more quotidian ends, e.g. in the law courts. It is also possible to distinguish inferences with conclusions that cannot be confirmed by observation from those whose conclusions are about matters that are not in principle unobservable, but which must be established by inference owing to contingent circumstances that prevent direct observation. These two divisions will tend to coincide. But inferences can also be divided into kinds according to the nature of the warrant they furnish: for example, is the principle on which the inference rests an empirically established correlation between sign and signified or a necessary relation of consequence imposed by the nature of the matter at issue and grasped by a special faculty of reason distinct from experience? We shall find some ancient figures who suppose that this distinction too coincides with the previous two. Lastly, it is possible to distinguish evidence which provides conclusive support for a conclusion from evidence which merely serves to make a conclusion likely or probable.

The tendency in question is to use the term ‘sign’ to designate the inferior member of these contrasting pairs. Since what it is to be inferior will vary depending on which contrast is in view, what is imported by talk of ‘signs’ will differ accordingly. It can be seen at its clearest if we also consider another term, in the use of which the opposite tendency is to be observed, viz. ‘demonstration’ (ἀπόδειξις). To be sure, it would be a mistake to read too much of the meaning acquired by the term ‘demonstration’ in Aristotelian and Stoic logic into its use by other philosophers, or even to suppose that its every occurrence in a Stoic or Aristotelian context need refer to an inference satisfying the stringent standards imposed on
demonstration in their logical theories.\textsuperscript{11} But ‘demonstration’ was the term to which those concerned to mark out a distinction between superior and inferior forms of inference often turned. Aristotle was the first to exploit this potential systematically, but it is sometimes apparent in the earlier uses of the term. Plato, for example, contrasts merely plausible reasoning (ἐἰκός, πιθανολογία) unflatteringly with demonstration in a number of passages (Phd. 92 c–d; Th. 162 e; Ti. 40 e).\textsuperscript{12}

But as I noted above, the tendency is not universal. If we call views of the kind we have been considering ‘low’ conceptions of signification, taking care to acknowledge that what counts as low for them need not be the same, it becomes clear that other schools and figures held a ‘high’ conception of sign-inference, which did not restrict the term ‘sign’ to inferior applications. We find this tendency in the Presocratic appeals to signs on which we have touched, but this outlook reveals itself most clearly in a willingness to put signs and demonstrations on a level with each other. So for instance, in his methodological remarks near the beginning of the letter to Herodotus, Epicurus speaks of signs and demonstrations without implying that there is any difference between them (37–8). This tendency was continued by Philodemus, the poet and Epicurean of the first century BC, who is our principal source for Epicurean views on these matters (De signis, 1x. 4; xxxi. 6). It also determined the form of the most extensive discussion of the subject to have come down to us, that of Sextus Empiricus, the Pyrrhonian sceptic and Empirical physician of the second century AD. He assigns the same part in theory construction to demonstration and to sign-inference, without recognizing a division of labour between them (PH 2. 96; M. 7. 25, 394; M. 8. 140, 319).

2. Prospectus

The present enquiry has four parts, called ‘studies’ rather than ‘chapters’ to emphasize the extent to which the views and controversies under consideration, beyond differing from each other,


\textsuperscript{12} Cf. Lloyd, Polarity and Analogy, 423 with n. 3.