Aristotle’s Empiricist Theory of Doxastic Knowledge

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Introduction

As is well known, Aristotle divides the human power of reason into two distinct powers: one of them is responsible for grasping things whose principles are necessary, the other is responsible for grasping contingent things. He refers to the latter power as the part of reason that is responsible for reasoning or calculating (logistikon, 1139a12) and also as that which is responsible for opinion (doxastikon, 1140b26 and 1144b14). Practical wisdom (phronēsis) and arts or crafts such as medicine are virtues of the doxastikon.

In this paper, we suggest that these virtues are best thought of as forms of knowledge. They are acquired states of cognition that equip their bearers reliably to form true opinions about matters in their respective domains. (We are not claiming that they are exhausted by such states of cognition.) We argue that Aristotle’s conception of the forms of knowledge for which the doxastikon is responsible (in short, his conception of doxastic knowledge) is distinctive, and that it can usefully be thought of as Empiricist in a sense of the term familiar to students of ancient medicine. For our purposes, two features of Empiricist epistemology stand out: the ancient Empiricists held that knowledge does not rest on grasping logical relations that hold among relevant propositions; and that knowledge does not rest on grasping unobservable natures or essences of things. While grasping both logical relations and intelligible essences of things is absolutely central to Aristotle’s epistemology of theoretical understanding, neither of these cognitive accomplishments, we argue, is part of acquiring, having, or exercising doxastic knowledge.

Ancient Empiricism seems to have originated among members of Herophilus’ medical school in the third century BCE. Medical Empiricism lasted for several centuries and was still expounded and defended by medical writers like Theodas and Menodotus in the second century CE. Empiricism was probably not limited to medical writers. The grammarian Dionysius Thrax seems at least to have had clear Empiricist sympathies.
Sextus Empiricus may have been a medical Empiricist, but his relationship to medical Empiricism is so complicated that we want to leave him aside for present purposes. Unfortunately, no exposition of Empiricist epistemology written by an Empiricist doctor is extant. However, Galen presents a fairly detailed picture of medical Empiricism in a number of extant writings, most importantly *An Outline of Empiricism*, of which we have a medieval Latin translation, and *On the Sects for Beginners*, which is extant in Galen's Greek. We now offer a brief introduction to the central tenets of medical Empiricism. We will then turn to Aristotle, arguing that there is nothing in his conception of doxastic knowledge that is problematic from the point of view of the epistemology of medical Empiricism.

The medical Empiricists were concerned to delimit themselves from medical Rationalists on the one hand and from non-expert medical practitioners on the other. They set themselves apart from the Rationalists by stressing three main differences. Whereas Rationalists believe that grasping logical relations between and among suitable propositions is crucial to medical discovery and medical practice, Empiricists deny that grasping such relations (for example, the relation of logical consequence) plays any role in medical discovery or medical practice. Rationalists insist that knowledge of unobservable facts and entities (including natures or essence), arrived at by inference, is both possible and a crucial part of medical expertise; by contrast, Empiricists limit themselves to observable facts and entities, being unpersuaded that unobservable facts or entities are accessible to the mind at all and also that such facts or entities can play any helpful role either in medical discovery or in medical practice. Lastly, Empiricists reject the idea that reflection on the nature of things can yield authoritative principles that bear on matters of medical practice: for example, the principle that universal agreement among medical sources is a reliable sign of truth. This is not to say that Empiricists cannot employ such principles. It is just that for principles to have any weight and authority, they require the support of observation and experience.¹ For example, the Empiricists accept the principles that similar types of

¹ “If, then, somebody were to say, on the basis of observation, that agreement is a sign of truth, he would be making an empiricist judgment. If, on the other hand, one were to say this, giving the nature of the matter as one's reason, one would be making a rationalist judgment.” (*Outline* VIII, 69. Translations from
treatment are effective in relation to the same type of illness, and that the same types of
treatment are effective in relation to similar types of illness. (These principles underlie
the so-called transition to the similar, which is one key tool of practising Empiricist
doctors; On the Sects 2, 3-4.) But the Empiricists hold that these principles only carry
weight and authority because they have been observed to be correct in many cases.

The Empiricists hold that quite sophisticated forms of reasoning and reflection
are integral parts of medical discovery and medical practice (these forms of reasoning
set them apart from non-expert medical practitioners). The epistemological term that
they favor for this kind of intellectual activity is epilogismos ("reflection" or "appraisal").
To engage in Empiricist reflection is a matter of reasoning from observable things (e.g.
this patient suffers from such-and-such an illness) to other things which are in principle
observable (such-and-such treatment will benefit this patient) but which are not currently
observable, for example because they lie in the future. Empiricist reflection relies on
memory and experience. A crucial way in which it differs from its Rationalist analogue,
which the Empiricists refer to as analogismos, is that Empiricist reflection does not rely
on grasping relations of logical consequence among suitable propositions. It is not a
matter of believing propositions to be true on the basis of grasping the validity and
soundness of arguments. Rather, it is a matter of informal reasoning in the course of
which thoughts that one is thinking and that one takes to be true exert a certain
psychological force on one’s mind, with the result that one finds oneself with a new
thought, which one also takes to be true. For example:

(1) This patient is an adult man of otherwise robust health who suffers from pleurisy.
(2) Bloodletting has helped such patients suffering from this illness in most cases.

So, (3) this patient should be treated by bloodletting.

An Outline of Empiricism and On the Sects for Beginners are as in Walzer-Frede 1985, with slight
modifications)

2 On the Sects 5, 11: “the epilogism...of which they say that it is a reasoning solely in terms of what is
apparent, is of use in the discovery of things which are not manifest temporarily. For this is the way they
themselves call things which belong to the class of things perceptible but which have not yet become
manifest.”
Furthermore, the informal reasoning characteristic of Empiricism is not just a matter of forming new beliefs. It is also a matter of grasping reasons. The doctor in our example comes to believe that his patient should be treated by bloodletting. But he also works out a reason why this is so, so that he is able to explain why he selects this particular method of treatment. Galen makes this point and illustrates it with a nice example. The Empiricist, he says,

makes use of causal accounts and proofs based on what has been ascertained antecedently by means of perception in an evident manner. Let us assume that, in the case of a slipped joint accompanied by a wound, a doctor is asked why he does not reset the limb. He will answer: Because it has been observed that, if something is reset under these conditions, it produces a spasm. For we have to keep in mind never to make any assertions based on logical consequence but only assertions based on evident observation and memory. It is in accordance with this, then, that the Empiricist constructs his art and teaches others. (An Outline of Empiricism 7, 63-64)

1. The distinction between epistemomonikon and logistikon in Nicomachean Ethics 6.1

Now that we have a firmer grasp of the difference between the rationalist conception of knowledge, and the empiricist conception of knowledge, we can ask ourselves the seemingly straightforward question: which of these two accounts of knowledge fits Aristotle’s account of practical knowledge? What we aim to show in this paper is that the empiricist picture fits Aristotle’s account of practical knowledge, including his account of ethical knowledge, and – unsurprisingly – the rationalist picture fits Aristotle’s conception of theoretical knowledge. If this is right, it makes Aristotle’s analysis of the nature of knowledge attractively complex. Different domains of reality demand different types of knowledge. Thus, the simple claim, that Aristotle has empiricist tendencies, or even is an empiricist, turns out to be too simple. For one type of knowledge he is rationalist, for another he is empiricist.

The basis for thinking that Aristotle holds there to be two radically different types of knowledge comes from book 6 of the Nicomachean Ethics. There, Aristotle divides the part of the soul which engages in reason (the rational soul) into two distinct parts, according as to what we study (θεωροῦμεν) with those two parts (NE 6.1, 1139a6-8):
"One is that with which we contemplate those amongst beings whose principles cannot be otherwise, the other is that with which we contemplate beings which can be otherwise." 3 The part which deals with matters whose principles are necessary Aristotle terms in this chapter the ἐπιστημονικόν (1139a12), the part which deals with things which could be otherwise – contingent matters – the λογιστικόν (ibid); elsewhere he also calls this part, revealingly, the δοξαστικόν (6.5, 1140b26; 6.13, 1144b14). 4

What are the beings whose principles cannot be otherwise? Presumably the stars, mathematical and geometrical items, natural substances and their attributes. These are the items about which there can be the sort of understanding that Aristotle describes in the Posterior Analytics. The link between necessity and this type of understanding is reiterated by Aristotle in NE 6.3: "everyone supposes that what we understand (ἐπιστάμεθα) cannot be otherwise" (1139b20-21). Thus, if episteme is an excellence, it must be an excellence of the part of the soul which contemplates things whose principles cannot be otherwise, and must therefore be a virtue of the ἐπιστημονικόν. 5

The logistikon studies the things which can be otherwise. Now, one thing to note is that there is an asymmetry between Aristotle’s formulation of what the epistemonikon studies (the things whose principles cannot be otherwise) and what the logistikon studies (the things which can be otherwise – no reference to principles). This asymmetry comes about not because the realm of contingent things (whatever they are) lacks principles or causes. Rather, it is because the realm of study for the logistikon is

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3 This translation follows Broadie/Rowe, but not Irwin, in taking τὰ ἐνδεχόμενα to be the object of an implied θεωροῦμεν in the second relative clause. Irwin thinks the second relative clause means ‘with the other we study beings whose principles admit of being otherwise’.
4 We use the two terms interchangeably, as Aristotle does. When using the word δοξαστικόν, Aristotle emphasizes the fact that this part of the rational soul lacks episteme. When using the word λογιστικόν, he reminds us that it nonetheless engages in reasoning.
5 The name might suggest that it is the virtue of the ἐπιστημονικόν, but that is misleading. There is the virtue which is excellence at grasping the principles themselves (nous), and episteme in this more restricted meaning is the excellence at grasping the theorems (the things of which the principles are principles).
the realm of both natural science and the more properly theoretical sciences (mathematics, first philosophy). But in the natural sciences, whereas the principles are assuredly necessary, facts about particulars are notoriously not in the same way necessary. Individual or particular trees are subject to the vagaries of the real world, and may not develop the features which trees (plural, understood as referring to a universal) necessarily have. However, Aristotle holds that natural science studies individual trees (contingent things) insofar as they are members of kinds, about which there are necessary truths. This is part of what he means by his common adage that science studies the universal. Hence, the epistemonikon studies things which are necessary and some things which are contingent, but all the things it studies are unified in virtue of having necessary principles.

What should the phrase "things which can be otherwise" be understood to refer to? He tells us in NE 6.4 that "what admits of being otherwise includes what is produced and what is achieved in action" (1140a1-2). "What is produced" refers to the actual products, which need not be substances: tables, chairs, flutes, but also health (when administering medicine), pleasure (when entertaining someone), persuasion (when giving a speech), knowledge (when teaching), etc. "What is achieved in action" refers to the sorts of action which will be undertaken not because of the product or state they bring about, but because of the activity itself. This will obviously and prominently include exercise of the virtues: acting kindly, acting generously, etc. This dual focus of the logistikon gives rise to two possible states of the logistikon, "a state involving reason and concerning action" and "a state involving reason and concerning production." Aristotle goes to some trouble to differentiate these two type of state, and will eventually identify the excellent state concerning production as craft-knowledge (techne) and the one concerning action as practical wisdom (phronesis).

We will occasionally touch on the difference between the sort of knowledge that pertains to production and the sort of knowledge that pertains to action, but by and large we think that they are of the same sort, and that they both are to be analyzed along empiricist lines, for Aristotle. After all, when Aristotle is discussing the epistemological status of ethical truths, his most common comparison is to truths in craft domains. For instance, in NE 2.2, Aristotle points out that "the account of particular cases is still more
inexact. For these fall under no craft or profession; the agents must consider in each case what the opportune action is, as doctors and navigators do" (1104a6-10).

More important for our purposes though is that by hiving off the domain of thought about contingents from the domain of thought where necessity is involved, Aristotle opens up the possibility that successful reasoning in the first area of thought – the activity of the perfected cognitive state of the doxastikon – need not involve grasp of the sorts of entity which give rise to necessity on Aristotle’s metaphysical picture, that is, natures or essences. Or, more precisely, it may not involve the grasp of essences as essences. Such a grasp is captured by the apparatus of definition and demonstration as described in the Posterior Analytics. Such an apparatus is explicitly brought in because of the need for accounting for the necessity of the items being grasped. Indeed episteme is defined or characterized in Posterior Analytics 1.2 as knowing "of the explanation because of which the object holds that it is its explanation, and also that it is not possible for it to be otherwise;" the explanatory first principles of the science just are, at least predominantly, specifications of the essences of the items studied by the science, and the necessity of the facts in the science are explicitly said to derive from the kind of necessity attaching to predications of essence (1.6). Episteme thus has two features which jointly characterize it:

It proceeds from first principles which are necessary and grasped as such;

It derives its theorems by discerning what follows, logically, from those first principles. (These two features are precisely the features of a rationalist account of knowledge.)

If the knowledge that the perfected logistikon has does not consist in grasp of definitional first principles understood as claims about essence entailing logically the remaining claims in the relevant body of knowledge, what does it consist in? We argue that neither of these features of episteme are to be found in the operation of the logistikon – or more accurately, the success of the operations of logistikon is not due to either of these two features.
To be sure, the reasonings of the *logistikon* involve the discerning of explanatory structure. Aristotle nods to this by very occasionally using *episteme*-locutions in describing practical knowledge, but it is also implicit in what he says at the beginning of *NE* 6.6, 1140b32-3: "everything demonstrable and every science have principles, since scientific knowledge involves reason" – the inference goes from *involving reason* to *having principles*, and we are told that *phronesis* involves reason at 6.5, 1140b5. But to say that the knowledge of the *logistikon* involves seeing explanatory connections is not yet to say that it must grasp essences or employ the devices of deductive logic. But now to settle these questions, we must examine the texts which tell us about the kind of reasoning exhibited by the *logistikon*.

2. How the *doxastikon* thinks in practical and productive reasoning

2.1: The central case

We will begin this section by sketching what we take to be a central, paradigmatic case of practical thinking leading to action, as described in Aristotle’s theory. We intend the interpretation of Aristotle’s theory that underlies this sketch to be familiar to the audience and to be relatively uncontroversial. Suppose you’re a virtuous, practically wise person. You find yourself in a situation that provides you with an opportunity for a fine and virtuous action. Suppose it comes to your attention that a friend of yours is unable to afford the tuition fees for a suitable college education for his talented daughter. You have enough savings to be able to help, but it is not immediately clear how you should go about helping your friend. How do you tactfully communicate your offer of help? Write an email? Pick up the telephone? On consideration it seems best to visit your friend, to talk to him in some detail about how you yourself received help in a similar situation many years ago, and how happy it would make you if your friend accepted your offer of financial assistance. You hit exactly the right tone and your friend, after some hesitation, accepts your offer of help, provided that his daughter, too, finds the arrangement acceptable.

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6 *NE* 7.2 and 7.3.
According to Aristotle’s theory, this is a case of a virtuous person responding to a situation that calls for an act of liberality, the character-virtue that is responsible for giving and taking property (NE 4.1, 1119b22-5). The fact that your friend is in need of financial assistance is salient to you and calls into play your liberality and your practical wisdom. When this fact about your friend comes to your attention, you judge that it would be good to give an appropriate amount of money to your friend. You also form a rational desire (a wish) to give such an amount of money to your friend. Furthermore, you view the action of helping your friend send his talented daughter to a good college as a fine thing to do, because you see it as a fitting response to the various features of the complex situation you’re in; and you anticipate with pleasure the outcome of the action, namely your friend’s daughter, thanks to your help, going to a good college. So your response to the situation is both one of cognition and one of affect; and your affective response is both one of rational desire and one of non-rational desire, including appetitive desire for the pleasure of seeing this particular good outcome unfold in the world, and perhaps also a spirited desire to enact this particular fine action.

You have now specified for yourself a goal for action, which is an object of both rational and non-rational desire. Furthermore, since it is not immediately clear what exactly you should do so as to realize this goal, your situation calls for deliberation. The goal you have specified for yourself is a starting-point for deliberation. Here is how Aristotle describes what follows:

We deliberate not about ends but about what promotes ends [...] we lay down the end and then examine the ways and means to achieve it. If it appears that any of several means will reach it, we examine which of them will reach it most easily and most finely; and if only one means reaches it, we examine how that means will reach it, and how the means itself is reached, until we come to the first cause, the last thing to be discovered. (NE 3.3, 1112b11-20)

In the situation we envisaged, several means seem suited to reaching the goal. You might lay out your offer of financial assistance in a carefully worded email, or by talking to your friend on the telephone, or in the course of meeting in person. Given that your

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8 NE 3.3, 1112b8-9: “Deliberation concerns what is usually [one way rather than another], where the outcome is unclear, and the right way to act is undefined” (translations from the NE in the present section are Irwin’s, with minor modifications).
friend is a person of a certain pride, the delicacy of the situation makes it seem best to talk to him about this in person. A visit to his home, you think, is best suited to the situation, and is also most likely to result in success. You know that your friend is currently at home; so you don’t need to deliberate about how to locate him. Your deliberation has reached its end: you have specified for yourself a course of action that you know how to enact without further deliberation. You go to your friend's home in order to discuss your proposal with him.

Both the process of deliberation that leads up to making a decision and the implementation of the decision can be described by means of practical syllogisms. The process that leads to the decision can be described as follows:

(1) I should provide my friend with needed financial help.
(2) I can help my friend by convincing him to accept a gift.
So, (3) I should convince my friend to accept a gift.
(4) The best way of convincing him is to go to his home to discuss the proposal.
So, (5) I should go to my friend's home to discuss the proposal.

(5) is the content of your decision. Its implementation can be described as follows:

(5) I should go to my friend's home.
(6) This house is my friend's home.
So, (7) I should go to this house.

Rightaway, you go to your friend's house. One thing to note is that neither deliberative syllogisms nor implementation syllogisms need to be deductively valid. Aristotle’s interest in presenting these syllogisms is in explaining why agents act in particular ways. He is interested in specifying sufficient conditions for agents to be motivated to act in

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9 We take this complex syllogism, which represents a deliberative process, to be parallel to the complex “cloak syllogism” in De Motu 7: “I need a covering; a cloak is a covering. I need a cloak. What I need, I have to make; I need a cloak. I have to make a cloak. And the conclusion, the ‘I have to make a cloak’, is an action” (701a17-20).
10 We take this syllogism, which represents the implementation of a decision, to be parallel to the syllogism presented at NE 7.3, 1147a29-31 (quoted presently in the same paragraph of the main text).
11 This fact is noted by Nussbaum (1978: Essay 4), among others.
specific ways. For such thoughts to provide sufficient conditions for being motivated to act, there must be a psychological mechanism that ensures that when thoughts of these kinds interact with one another in the right way, this interaction guarantees motivation. Aristotle is committed to the existence of such a mechanism. This becomes clear in *NE* 7.3, where he says this:

One belief is universal; the other is about particulars, and because they are particulars, perception controls them. And in the cases where these two beliefs result in one belief, it is necessary, in one case, for the soul to affirm what has been concluded, but in the case of beliefs about production, to act at once on what has been concluded. If, for instance, anything sweet must be tasted, and this, some one particular thing, is sweet, it is necessary for someone who is able and unhindered also to act on this at the same time. (*NE* 7.3, 1147a25-31)

Aristotle's idea here, we take it, is that when suitable propositions are thought together, so that a single, complex practical opinion is formed, then a practical conclusion emerges in the agent's mind, and motivation is guaranteed. For example, when someone integrates in their mind the beliefs that (1) anything sweet must be tasted and that (2) *this* is sweet, this integration gives rise to the complex opinion that anything sweet must be tasted *and* that *this* is sweet. As a result, the practical conclusion that *this* must be tasted emerges in the agent's mind and the agent is motivated to act. However, there is no good reason to think that the operation of this mechanism requires that the person in question must produce a deductively valid argument, so that he or she is in a position to grasp the relevant practical conclusion as following from suitable premises by logical consequence. Aristotle also thinks that when thoughts of these kinds occur together in a person's mind and interact with one another in the right way, this amounts to the person grasping a reason for acting in a certain way, a reason that they could state so as to explain why it is that they are motivated to act in this way. But to grasp a reason in this way, Aristotle evidently thinks, it is not necessary for the person to grasp a conclusion as following from certain premises by logical consequence.

Another thing to note is that the comparison among alternatives that was part of the process of deliberation is not captured by the practical syllogism that lies behind (5).
The practical syllogism presents the results of practical thinking (the choices made and the reasons why those choices are made), but it does not present the full story about how those results were arrived at. We will return to this point shortly.

2.2 Questions and complications

How it is that virtuous and practically wise agents specify suitable goals to begin with? In other words, how do they latch onto suitable starting-points for deliberation? One might think that some kind of grasp of an intelligible, but unobservable nature or essence is required for fastening onto a suitable starting-point for the virtuous person's deliberation. Perhaps this requires grasping the nature or essence of human happiness, or the nature of ethical virtue or ethically virtuous activity? This is not the way things happened in our example. The starting-point for deliberation was the goal of providing a deserving friend with needed financial help. This goal was, of course, prospective and unimplemented. However, its realization in the world is an observable sequence of events and its unfolding can be expected and foreseen in exactly the same way that other observable events, such as a sick patient recuperating, can be expected and foreseen. In our example, you adopted the goal of helping your friend because you noticed that your friend was in a financial impasse that you were able to remedy. Much like this, a medical doctor adopts the goal of restoring a patient’s health because she notices that the patient suffers from a medical condition that she is able to remedy.

One might also wonder about how it is that Aristotle means to account for the comparisons between alternative courses of action that agents will often need to make in the course of deliberation. As we have seen, this comparative work is not captured by practical syllogisms. In the one place in his extant writings where he does relate this kind of work to a psychological capacity (De Anima 3.11), he relates it to the deliberative or calculative kind of phantasia. He says that the deliberative kind of phantasia is found only in creatures capable of reasoning, and then explains this claim by saying the following:
For it is already a work of reasoning to choose whether to do this or that; and it is necessary to measure by one thing, for the person in question pursues the greater; so that he or she is able to make one out of a plurality of images. *(DA 3.11, 434a7-10)*

The passage is brief and not as explicit as we would like it to be. However, it does make clear that Aristotle means to ascribe to the imagination an important role in making these kinds of comparison. In making such comparisons among alternative courses of action, the person will rely on their memory and experience in envisaging the various possibilities, as it were, side by side, so as to be able to see which of the alternatives is best. It is worth noting that there is nothing in this picture of making comparisons by imagining the alternatives side-by-side that would be objectionable to an Empiricist epistemologist. On the contrary, making this kind of work largely a matter of exercising one’s imagination (which must rely importantly on memory and experience) should be attractive to the Empiricist.

Here’s a complication that needs to be added to the picture suggested by the central case, as we described it in the previous section. Decisions can be policies or standing commitments, rather than occurrent desires. Arguably, such standing commitments are constituents of the dispositional states that are the character-virtues.\(^\text{12}\)

This is perhaps easiest to see in the case of the virtue of temperance. Temperate people will have certain standing commitments to eat certain kinds of food on suitable occasions and abstain from others. When the time comes to have a meal, temperate people will often not need to deliberate about what to eat. Rather, the occasion and the circumstances of the action will call into play a pre-existing decision to eat such-and-such kinds of food on this kind of occasion, and the agent will simply enact that decision. This idea, too, is unproblematic from the Empiricist’s point of view. When the time comes to have a meal, the temperate person will observe the available options and will draw on their views about healthy kinds of food and drink in selecting some kinds of food and drink and abstaining from others. These views about healthy kinds of food may have the status of knowledge, if they rest appropriately on the person’s own experience. But it may be acceptable if the temperate person does not have such knowledge, but

\(^\text{12}\) *NE* 2.5, 1106a3-4: “the virtues are decisions, or are not without decision.”
rather adopts these views by deferring to experts who have the right kind of experience with the subject-matter.

Another complication is this. Practical thought doesn't always begin with a specification of a goal that requires deliberation. In some cases, it starts with noticing that the situation you are in provides an opportunity for acting well in a quite specific way. The virtuous agent will then see the situation, and the action it calls for, in light of more general ethical commitments. In this way, the central case's movement of thought from the more general to the more specific can be reversed. For example, suppose it comes to your attention that someone who owes you money is currently at the marketplace and has collected precisely the amount of money he owes you (Aristotle offers a similar example in Physics 2.5). You don't need to deliberate about how to collect the debt. You just go to the marketplace, locate the debtor and collect your debt. Aristotle's theory of practical thought allows this kind of case, too.

A passage in NE 6.11 is relevant to this kind of case. In the context, Aristotle discusses various intellectual capacities that deal with human actions, and hence with the particulars in which Aristotle thinks human actions consist. He then turns to the acquired state of nous, which we translate as "immediate insight," and says this about it:

Immediate insight is also concerned with the last things, and in both directions. For there is immediate insight, not an explanatory account, both about the first terms and about the last things. In demonstrations immediate insight is about the unchanging terms that are first. In propositions about action immediate insight is about what is last, and what is possible, and about the minor premise [literally: "the other proposition"]. For these premises are starting-points of the goal; since universals are reached from particulars. We must therefore have perception of these particulars, and this perception is immediate insight. (NE 6.11, 1143a35-b5)

Shortly after this passage, Aristotle adds that this kind of practical perceptiveness is like an eye that enables people to see things correctly, and that comes from experience (1143b13-14). In a somewhat similar passage in ch. 8, Aristotle says that phronēsis pertains to what is last, which is apprehended by perception (1142a23-27). He compares the kind of perception that phronēsis is or involves to perceiving that what is last among mathematical objects is a triangle (1142a28-30).
The passage from *NE* 6.11, quoted just now, makes clear that, in the domain of human actions, the relevant “last things” for which practical *nous* is responsible are propositions, and propositions that are suitable to feature as minor premises in practical syllogisms. Furthermore, these propositions are presented as concerning things that are possible (ἐνδεχοµένου, 1143b3). This detail in our passage is illuminated by comparison with *De Motu* 7. *De Motu* 7 deals with the question how it is that thinking sometimes gives rise to action. Aristotle makes a comparison between theoretical thinking and practical thinking. In both cases, the thinking proceeds from two propositions that are treated as premises to a conclusion. In the case of practical thinking, Aristotle says, the conclusion is an action. He then offers a number of examples. Here is the most fully developed example:

I need a covering; a cloak is a covering. I need a cloak. What I need, I should make; I need a cloak. I should make a cloak. And the conclusion, the “I should make a cloak,” is an action. And he acts from a starting-point. If there is to be a cloak, there must necessarily be this first, and if this, this. And this he does at once. Now, that the action is the conclusion, is clear. And the propositions to do with action come about through two kinds of things, both through the good and through the possible. (*DM* 7, 701a17-25)

With regard to propositions or premises to do with action, Aristotle is distinguishing between two kinds of factor: “the good” and “the possible” (διὰ τοῦ δυνατοῦ). The text from *NE* 6.11 that we looked at a short while ago presents the minor premise of a practical syllogism as being about “what is possible” (ἐνδεχοµένου), and so it seems reasonable to conjecture that in *DM* 7 Aristotle means to distinguish between two kinds of premises that feature in practical syllogisms: on the one hand, premises that present something as good, as a worthwhile goal of human action; on the other hand, premises that present something as practicable, as capable of being done by the agent. This is how Martha Nussbaum proposes to interpret the distinction: “We should understand Aristotle,” she suggests, “to be distinguishing two sorts of premises in a single syllogism: there is the major, which mentions the object as desirable, and the minor, which pertains to the particular situation and shows how it is possible for the desired goal to be attained.” Further: “To have an action we must have an end characterized as desirable and a specification, provided by a cognitive faculty, of how it can be realized”
The propositions that Aristotle offers as examples fall into these two kinds: “I need a covering” presents something as needed or to be accomplished; “a cloak is a covering” presents something that the agent can make, so as to obtain the needed covering. At the next step of practical thinking envisaged in the example, “I need a cloak” (which is the conclusion of the first syllogism) presents something as needed, and “what I need, I should make” presents a path to meeting the need, a course of action that the agent is capable of accomplishing.

We can use this apparatus to represent the practical thinking of the creditor whose thoughts we considered a short while ago. The premise about the good is “I should collect debts,” or something like this. The premise about the possible is “Collecting $500 from my debtor at the marketplace is to collect a debt.” The conclusion “I should collect $500 from my debtor at the marketplace” is an action. The agent performs this action by going to the marketplace, meeting the debtor, and collecting the debt. Now, in the situation that we have described the situation-specific goal of collecting a debt is initially identified by an act of noticing that Aristotle assigns to the practical nous. It was this act of noticing that came first in our description of the agent’s practical thought. The agent first notices that collecting a debt is possible in the circumstances, and they then relate the particular situation to the general fact that debts should be collected. It is not as if they first think that debts should be collected and then try to identify some particular debt that someone might owe them. After all, what triggered the episode was that it came to our agent’s attention that his debtor is currently in funds and can be met at the marketplace.

One might think that this cannot be Aristotle’s analysis, on the grounds that he speaks of the kind of proposition for which practical nous is responsible as concerning something that is last. He also describes propositions of the relevant kind as minor premises of practical syllogisms. Is he committed to thinking that this kind of proposition must come last in the chronological order of the agent’s thinking? We don’t think so. In the case of theoretical thinking, the notion that the first terms or principles are last or ultimate is a metaphysical notion, not a psychological one. They are meant to be last or ultimate in the objective explanatory order of things: these terms, and the relevant definitional propositions about them, are explanatory of other things, but within the
domain of the science in question nothing is explanatory of them. We should expect that likewise in the case of practical thinking the notion that the relevant propositions about the possible are last is a metaphysical notion, not a psychological one. They are last or ultimate in that they are the most specific, least general propositions that feature in the practical thinking that leads to making a decision. They are directly about the particular circumstances of an action. They feature in the explanation of a decision without being mediated by any further, more specific or particular propositions. If so, to say that these practical propositions are last or pertain to last or ultimate things is not to say anything about their place in the chronological order of the agent’s psychology. Aristotle can allow cases in which a proposition about the good comes first in the agent’s psychology, as when you first think that you should have a meal now and then think about a specific way of going about this. But he can also allow cases in which a situation-specific proposition about the possible comes first in the agent’s psychology, as in the example that we presented.

The upshot of all this is that Aristotle offers us a sophisticated, rather flexible theory of how it is that practical thinking proceeds and gives rise to action. This theory is also applicable to productive thinking. In typical cases, the ultimate goal of productive thinking will be the goal that is characteristic of the art or craft in question. In the case of medicine, it will be a patient’s health. Based on their experience-based knowledge of pathological conditions, the medical expert will diagnose the patient’s condition and will know what treatment to adopt so as to restore the patient’s health. Choosing a specific treatment may call for reflection, as there may be alternative courses of treatment applicable to the disease in question. The outcome of this kind of deliberation may depend on a variety of factors about the patient and the circumstances, such as the patient’s age, strength, and the current season. In some rather routine cases, the medical expert will be able to prescribe a course of treatment without any deliberation, because the case is clear-cut. In this kind of case, the medical expert can simply act on their knowledge of the treatment appropriate to this kind of disease.

Furthermore, productive thought need not always proceed from the goal of health via diagnosis of a disease to specific courses of treatment. A medical expert might notice a symptom in a patient whom she previously believed to be completely healthy,
and noticing this symptom might trigger the doctor’s concern for the patient’s health. Noticing this symptom might also immediately call a quite specific method of treatment to the doctor’s mind. In this case, no deliberation takes place, and productive thought starts not from the goal of restoring a patient’s health, but from noticing a symptom displayed by a person who otherwise seemed to be completely healthy.

In this section, we have described what happens both in practical thinking and in productive thinking without relying on unobservable natures or essences, or on grasping a conclusion of an argument as following from the argument by logical consequence. There is nothing in our description or analysis of what happens in these cases that would be unacceptable to an Empiricist epistemologist.

3. Objections

(a) It is a feature of our interpretation of the nature of the doxastikon’s knowledge that this knowledge is not knowledge of the nature or essence of its objects. So for instance, we are committed to the view that the doctor does not grasp the essence of health, and the phronimos does not grasp the essence of happiness.

This may strike the reader as intolerable. Surely, if anyone has knowledge of what health is, it’s the doctor? And surely, if anyone has knowledge about what happiness is, it’s the phronimos? And surely Aristotle would agree with that?

To answer this objection, we must point to a certain indeterminacy in the locution "know what health is." Of course, the doctor must get the answer to this question right. And this must not be a matter of chance. It is something the doctor has become convinced of, thanks to her experience in the field, repeatedly confirming that characterization, which she may have come by through reading or through her own reflections on the experiences she has had. In this sense, the doctor does know what health is.

But this is different, in Aristotle’s book, from having episteme of what health is. To have episteme of health, one must grasp that health is such-and-such in its essence, and that means, for Aristotle, grasping that fact as being an axiom in whatever demonstrative science health features in – human biology, say. To grasp this fact as an
axiom in human biology is to grasp it under a double aspect: (1) that this fact about health is a fact which is demonstrated by no other proposition in human biology, and (2) that this fact about health serves to demonstrate other facts in the science of human biology. Having such a grasp of that fact will amount to understanding this fact as being a fact about health’s essence. It is a cognitive achievement of some considerable sophistication, which presupposes that the person who has managed to achieve it has arranged their knowledge in the form of axioms and theorems, where the theorems follow logically from the axioms. Only such a person can truly be said, according to Aristotle, to grasp that health cannot be otherwise than such-and-such. The doctor does not have that sort of grasp of the fact that health is such-and-such.

Equally, the phronimos does not have that kind of grasp of the fact that happiness is the excellent activity of the part of the soul that has reason. Although this fact will feature in some of the phronimos’ deliberations, and indeed will feature as a first principle in her deliberations and practical reasonings, we have already seen that this does not mean that it is deployed in demonstrations by the phronimos. In fact, we have already seen the non-deductive nature of the reasonings of the phronimos. But this means that the phronimos is in no position to accord this fact about happiness its due place in a network of demonstrative knowledge, and hence is no position to appreciate this proposition as giving the essence of happiness.

(b) Why can’t the doctor reason deductively? Surely she can reason by saying "aspirin cures headaches, this is an aspirin, this condition is a headache, therefore this aspirin will cure this condition?" Or "This fever is due either to a bacterial infection or a viral infection; it isn’t a viral infection; therefore it is a bacterial infection?" Who would want to go to a doctor who didn’t reason like that?

Our answer is, of course, that the doctor can reason like this, but we have two caveats. First, we insist that although the doctor can reason like this on some occasions, the doctor need not reason like this on every occasion. We have already detailed how practical reasoning according to Aristotle is not always a matter of engaging in deductive reasoning. This can be obscured by a too narrow choice of
example. So the prominent example of a practical syllogism in *NE* 7.3’s discussion of akrasia happens to be deductively valid:

I should not eat sweet things;
This is sweet;
Therefore, I should not eat this.

However, even in the same chapter of the *NE*, when discussing a slightly different phenomenon from akrasia, Aristotle gives a good example of a practical syllogism which we take not to be deductively valid:

Dry things benefit humans;
I am a human;
This food is dry;
Therefore this food benefits me.

The problem with taking this to be deductively valid is that it appears the only way to do so is to treat the first premiss as saying something like this: "anything which is dry is such that it benefits any human who eats it," which has as a consequence that *all* the ten thousand crackers lined up on the counter will benefit me. The conclusion is false (only the first few will benefit me; the subsequent nine thousand-whatever will have increasingly terrible effects), and this is because the first premiss, so understood, is false. What we want is some way of understanding the first premiss as saying that dry things benefit humans in such-and-such circumstances, as long as they aren’t sated, etc., but under this reading, the argument will not be deductively valid.\(^{13}\)

Second, the doctor’s success as a practical reasoner in the medical domain is not measured by how much of their reasoning is deductively valid. It simply is no sign of excellence as a practical reasoner that you reason deductively. There may be

\(^{13}\) The point might be clearer if we adopt the suggestion of Kenny (1966, 172) that “we imagine ‘should eat’ for *συμφέρει*”. Then the syllogism becomes: “Humans should eat dry things; I am a human; this food is dry; therefore I should eat this food.” To make this syllogism deductively valid, we have to understand the major premiss as asserting that all dry things should be eaten by humans, which is false.
occasions when you do, but this will be an artifact of that particular situation. Reasoning by association, of the sort described in section 2 above, is sufficient. Means-end reasoning need not be deductive and typically won't be; nor is it any better if it happens to be deductive.

(c) A further objection points to some textual evidence that Aristotle means to accord grasp of essences to those who have practical or productive knowledge. The text in question is *Metaphysics* A 1, 981a5-12:

And *technē* arises, when from many notions gained by experience one universal judgement about similar objects is produced. For to have a judgement that when Callias was ill of this disease this did him good, and similarly in the case of Socrates and in many individual cases, is a matter of experience; but to judge that it has done good to all persons of a certain constitution, marked off in one class, when they were ill of this disease, e.g. to phlegmatic or bilious people when burning with fever, – this is a matter of art.

This passage draws a distinction between the sorts of judgment made on the basis of experience alone, and the sort of judgment made when one is in possession of *technē*, or craft-knowledge. The judgment made on the basis of *technē* requires making a judgment where one assembles together several different cases and marks them off in one class (κατ᾽ ἐἴδος ἐν ἀφορισθεῖσι, 981a10). What does this mean? One suggestion – the objection, in fact, to our reading – is that it requires the technician to grasp the essence or form that is common to all the cases in question, perhaps the form *phlegmatic* or *bilious*. After all, the objection goes, there is a reference to the ἐἴδος in Aristotle’s description of the cognitive achievement of the technician.

Our response is that there is nothing in the language of κατ᾽ ἐἴδος ἐν ἀφορισθεῖσι that forces a high-powered reading of the phrase, according to which the technician is being said to have grasp of an essence as such. Think back to the example given above taken from Galen’s description of the empiricist doctor: according to Galen, the empiricist doctor makes use of causal accounts and proofs based on what has been ascertained antecedently by means of perception in an evident manner. Let us assume that, in the case of a slipped joint accompanied by a
wound, a doctor is asked why he does not reset the limb. He will answer: Because it has been observed that, if something is reset under these conditions, it produces a spasm' (Outline 7, 63-4).

Notice that the empiricist doctor answers the question "why should one not reset this limb?" by producing a universal description of the situation: "if something is reset under these conditions, it produces a spasm." The example is exactly in line with Aristotle's example in Metaphysics A 1. In that text, the doctor judges that a certain treatment is good, because "it has done good to all persons of a certain constitution, marked off in one class, when they were ill of this disease, e.g. to phlegmatic or bilious people when burning with fever." In Galen's terms, this would be to judge that it has been observed that, if someone is phlegmatic and feverish and given the treatment, then the treatment cures them. The universality exhibited by the phrase "if someone is phlegmatic and feverish and given the treatment, then..." is what shows that the doctor has "marked off" a set of cases according to a "single form," or "under a single heading," if you prefer. Thus, we can continue to think that the technician exhibits an advanced type of cognition, but not one that relies on grasping an essence as part of an explanatory network of necessary truths, in the way someone with episteme does.

One further note about this passage from Metaphysics A 1: it draws a distinction between those who grasp something through empeiria and those who grasp through techne. Empeiria is thus a lower-level achievement than techne. This does not falsify our thesis that techne in Aristotle is to be given a philosophical analysis along empiricist lines. Our thesis is not about the correct application of the word empeiria in Aristotle.

(d) The last text, from Metaphysics A 1, suggests a further complication for our project, leading to an objection. We have been talking of the practicing medical doctor, and the sort of knowledge she has. We have been arguing that this knowledge should be analyzed along empiricist lines, that is, that it is the sort of knowledge which is not based on grasp of essences or natures, and which is not organized through the structure of a demonstrative science, with theorems following deductively from first principles. But here is the complication: surely there are some propositions which will feature among the practical knowledge of the practicing doctor which will also feature in the theoretical knowledge of the physical biologist – someone studying in a theoretical
way the nature of the human body. Such propositions might include "the fevers of bilious people are reduced by bloodletting." In the moral domain, candidate propositions which would feature amongst those known by the *phronimos* and also amongst those known by the theoretical philosopher would include "the ergon of man is activity of the part of the soul that has reason," or "man is a social animal."

Now take someone who is leading the best kind of life possible for a human being, who has both *phronesis* and *sophia* and leads a life of theoretical contemplation. There seem to be propositions that she will now know in two contrasting ways. Her *doxastikon* will know that (e.g.) man is a social animal, and it will know this proposition *not* on the basis of mastering the demonstration of that fact on the basis of propositions defining the nature of man and animal and sociability, along with other key propositions in the human sciences. However, at the same time, her *epistemonikon* apparently will know the proposition on precisely that basis. She seems to have two different grasps of the same proposition: she has the true *doxa* (in her *doxastikon*) that man is a social animal, and she has the *episteme* (in her *epistemonikon*) that man is a social animal. The example generalizes: the theoretically-minded doctor, and the metaphysically inclined *phronimos* will surely have both doxastic and theoretical grasp of propositions such as "health is..." and "happiness is..." (or "the ergon of man is...").

And now the objection. In *Post An* I 33 Aristotle seems to say precisely that one person can’t have both *episteme* and *doxa* of the same thing: "it is clear from this that it is not possible to opine and to understand the same thing at the same time. For then you would at the same time have the belief that the same thing can be otherwise and cannot be otherwise – and this is not possible" (89a38-b1). The solution to this problem is to see that the translation I have just given – Barnes' translation – is highly misleading. What Aristotle actually says is that it is impossible for one *thing* or *subject* (in the Greek, there is no reference to a person) to have *episteme* and *doxa* of the same thing at the same time. By dividing the rational soul as he does, Aristotle opens up the possibility that one part of the rational soul has *doxa* of a fact, and another part of the same rational soul has at the same time *episteme* of that very fact. Thus, in offering an empiricist analysis of an agent’s practical knowledge, and a rationalist analysis of that agent’s theoretical knowledge, Aristotle opens up the possibility that one and the same
agent might have (empiricist) knowledge of that proposition P, and at the same time (rationalist) knowledge of the same proposition P – although the two instances of knowledge will reside in different parts of the agent’s soul.

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