Click to prove you're human



Aristotle talks about three types of knowledge in “The Nicomachean Ethics”, which is one of his best-known work on ethics. Aristotle divides knowledge into three types, i.e. Episteme, Techne and Phronesis. Episteme means scientific knowledge, Techne means knowledge of craft and Phronesis means ethical knowledge. There are modern applications of Aristotle’s 3 types of knowledge to help people become better leaders, managers as well as tackle situations efficiently. Read this blog to know more about Aristotle’s 3 types of knowledge and how leaders need to harness these three types to better their leadership capabilities. Courtesy: Pinterest Credits – Youtube (Academy of Ideas) What Aristotle considered as techno was that realm of knowledge which was related to arts and craft i.e., involving some form of creation.The process of technical or artistic creation cannot be made possible without employing knowledge of some kind and this knowledge was techne. For instance, to create a machine, technical knowledge is a must and without it the process of creation couldn’t take place. It uses technical/technological know-how to create such things which are meant to perform some functions. Therefore, techne is a practical skill which involves the use of tools to create something concrete. Hope you understood the relevance of the 1st one in the list of Aristotle’s 3 types of knowledge. There is one other form of knowledge which doesn’t try to create something new but focuses itself on understanding things which already exist in the universe. Aristotle names this realm as episteme i.e., scientific knowledge. For instance, Newton’s law of gravity was not about creating gravity but understanding how it works. And this is the field of episteme, a kind of knowledge which tries to make sense of the world around. This wraps the 2nd name in the list of Aristotle’s 3 types of knowledge. Must Read: 7 Best Philosophy Books of All Time Phronesis is the “practical virtue”. It involves use of practical wisdom to make ethical judgements in your everyday life and to acquire a strong moral character and habits. So, phronesis refers to that branch of knowledge which probes us to act in a certain manner with the aim of living a “good life”. It’s the wisdom required to make judgements when put in a conflicting position. For instance, you are making use of phronesis or ethical knowledge when you say it’s wrong to lie, or you are not supposed to hit people. Such moral judgements are not formed in a vacuum but is a product of the ethical knowledge which you have acquired over time. This completes the list of Aristotle’s 3 types of knowledge. Roger L. Martin, Richard Straub, and Julia Kirby in a blog by Harvard Business Review on ‘Leaders need to harness Aristotle’s 3 types of knowledge‘ talk about the combination of these three types of knowledge, i.e. in Episteme, Techne and Phronesis in ensuring effective leadership. The key reasons behind why leaders need to harness Aristotle’s 3 types of knowledge is that all these need three different styles of thinking; Episteme focuses on scientific knowledge, Techne uses arts, tech and tools and Phronesis utilises rationale and ethical judgement. By harnessing these three types of knowledge, leaders can make effective decisions while also distinct themselves from others. Thus, as per Aristotle, a leader can be more of an epistemic leader than a techne-focused leader, thus using each of these types of knowledge at the best of one’s abilities, can help foster distinctive leadership traits. For example, a manager who is more creative thus techne-focused will be able to curate better creative solutions for problems than focus on scientific solutions or ethical resolutions. But, on the other hand, a creative manager can also blend all these realms together and take more holistic decisions, on ethical, creative as well as scientific parameters. So, these are the 3 types of knowledge that Aristotle talks about. And you know how these categories are relevant even today. But the problem is that these categories have gotten hierarchised with time. In this setup, different kinds of knowledge don’t have an equal position but are believed to exist in a hierarchy where one kind of knowledge is given more importance than the other. For instance episteme and techne which root themselves in facts and physical reality are given more practical value than phronesis. This kind of hierarchisation though in itself problematic becomes all the more threatening when one branch of knowledge is completely negated. There should be an understanding that some problems could be solved only by engaging in the phonetic realm and if epistemic knowledge is employed there it could worsen the situation. In simpler terms, you can’t expect everything to have a scientific explanation and in the same manner not everything should be explained by taking a moral stance. For instance, Newton couldn’t have explained the law of gravity by using phronesis or ethical knowledge and no one could establish lying as a good or bad thing by providing a scientific argument. So, what is important is to understand which kind of knowledge should be employed where. For that one needs to first accept that different kinds of knowledge exist and that they could be used to solve different problems. In your everyday life you will face problems which will belong to these different realms. And there what you will need to do is first, comprehend the nature of the problem and then decide which approach to take. If you are thinking why to understand these different realms then the answer is that this is what it takes to become a good leader. In a world where everyone dreams of achieving greatness, understanding these different types of knowledge is what will take you closer to that goal. The simple reason behind this is that a leader who governs the masses must know which faculties to use when and where. A leader is supposed to make the right decisions by employing the required knowledge and how are you supposed to do that without knowing what these different types of knowledge are. So, go on and delve deeper into these ideas because you are going to need them at every wake of life. And it’s better to be prepared and face life with the right gears in hand. Also Read: Branches of Philosophy Hope you understood Aristotle’s 3 types of knowledge and their relevance in the modern world with this blog. Stay tuned with Leverage Edu for more such awesome content! Theoretical Knowledge: Aimed at purely speculative contemplation of truth, without any practical or technical projection. Based on the theoretical capacity of man, proposing general truths from experience with the help of logic and method.Practical Knowledge: Aimed at regulating individual and social action through practical wisdom or prudence. This involves the ability to act properly, accurately distinguishing good from evil.Productive Knowledge: Aimed at producing material or intellectual creations. Based on man’s ability to operate in accordance with rules. These can be called technical knowledge. Aristotle’s works included in productive wisdom are the Poetics and Rhetoric.Theoretical Reason: Seeks different scientific and humanistic knowledge, including philosophical. Philosophical disciplines dealing with theoretical rationale generically include formal logic, informal logic, and applied logic.Practical Reason: Directs its steps to the orientation of human action in ethical and political spheres. Also interested in the reflection about religion. The philosophical disciplines concerned with practical rationality are, respectively, ethics or moral philosophy, social and political philosophy, and philosophy of religion.Productive Reason: Projects technical progress and achievements toward the control, domination, and transformation of nature, man, and society. Technical rationality is represented in scientific technology. The philosophical discipline dealing with productive rationality is poietic, or the philosophy of work and art.According to Descartes, all men are endowed with an innate set of ideas that God has placed within them. These innate ideas are of a logical, mathematical, linguistic, physical, and metaphysical nature. From them, and through the use of a method to ensure the correct use of the fundamental operations of reason, one can build the entire system of all scientific truths. Humans can merely confirm the necessary truth of propositions that reason deductively formulated with the help of the method. For Descartes, human reason, within finite limits, is capable of knowing reality with absolute truth.4. Hume, as a Representative of Empiricism: His Stance on Knowledge?Hume’s theory of knowledge is interested in the pole of the object, that is, experience as the primary condition of knowledge. Its principles are opposed to epistemological rationalism. He does not speak of reason but of mind. The human mind is a kind of empty vessel that passively fills with the knowledge we acquire through sensible knowledge. For Hume, the only components of understanding are perceptions, which are divided into impressions and ideas. These components are associated or combined with each other by means of psychological mechanisms and laws common to all men. By these mechanisms and partnership laws, we all form complex and abstract ideas that allow us to know reality. For Hume, experience is the sole source of theoretical knowledge and also the sole criterion of truth.5. Why Does Kant’s Transcendental Idealism Represent a Synthesis of Rationalism and Empiricism?According to Kant, in human knowledge, we must distinguish two types of equally essential conditions: the empirical (the object or data) and the rational (the subject). Kant addressed especially the latter, which he called transcendental conditions, while acknowledging the indispensable role of the former. Empirical data provides the necessary basis for knowledge, and there cannot be any knowledge beyond or outside its boundaries. Empirical data is organized by concepts, propositions, and reasoning. A science is a system of concepts, propositions, and real reason stemming from the empirical data derived from experience. Kantian philosophy makes a balanced synthesis between subject and object, between reason and experience. Kant seeks a harmonious approach between what belongs to experience and what reason contributes in the process of knowledge.6. Can You Explain Briefly the Epistemological Positions on Truth? Criticisms?Dogmatism: Assumes the possibility of true and complete knowledge of reality. Dogmatism has unlimited confidence in the power of knowledge to know the truth. Criticism: This confidence in the limitless capacity of human reason is naive without accepting it as an unquestionable principle, lacking epistemological foundation. Descartes’ rationalism is a dogmatic epistemological position.Skepticism: The opposite of dogmatism. Skeptics believe that human knowledge cannot obtain true and complete knowledge of reality. No knowledge can be considered reliable. Limitations of knowledge, along with historical, social, and cultural factors, prevent the acceptance of an idea or theory as fully true. Criticism: Skepticism strives for an epistemological foundation for the truth of skeptical knowledge. A conclusive demonstration of the limits of human knowledge cannot be done from within but from outside these limits. To know the limits of reason, one would have to be outside or beyond them, which is an impossible position. Skepticism is self-contradictory or paradoxical: it asserts as true that it is not possible to say something is true. Hume’s empiricism is a skeptical epistemological position.Relativism: Skepticism denies the existence of truth. Relativism denies the universal and necessary character of that truth. Truth has a scope and relative permanence. There are no absolute truths. All truth is limited. Limits depend on subjective factors (biological evolution, brain design, sensory or mental organization, cognitive factors) or external factors (historical period, society, and culture). Criticism: It is possible for human reason to attain true knowledge of reality.Criticism: Shares with dogmatism a confidence in the powers of human knowledge. Believes that scientific apprehension of truth through reason is possible. Tries to scrutinize the origin, conditions, scope, and limits of human knowledge. Attempts to ground epistemological and methodological conditions of theoretical rationale. Its position is not dogmatic but critical.7. What is Truth as Unveiling?Truth is to reveal what is hidden from reality. Truth is the unveiling of what is concealed. Truth comes from intellectual activity to show things as they are in themselves, beyond appearances that mask them. Truth as unveiling is a property that discovers and reveals thinking about things; truth is a property of reality. This criterion of truth has been sustained by pre-Socratic philosophers and Martin Heidegger.8. What is Truth as a Process?Truth is not only the conclusion or outcome of an investigation but the whole process that led to it, that is, the totality of philosophical thought with all its rational moments or intermediate arguments. This criterion of truth has been defended by Plato and Hegel.9. What is Truth as Correspondence?Truth is the match between the proposition and the thought put into reality. The immediate adequacy between what is said and what is, between understanding and the thing. Truth is the correspondence between thinking and being. This criterion of truth has had several supporters: Aristotle, Hume, and Wittgenstein.10. What is Truth as Practical Realization?For this theory, the truth or falsity of a proposition is not only a theoretical or software problem but something that depends on the adequacy or inadequacy of its practical consequences. It focuses on practical and functional design. The truth of knowledge is directly dependent on its ability to serve practical purposes. This is obvious for scientific knowledge, as well as for knowledge of control, mastery, and transformation, but so too is it for philosophical learning, while aiming at an educational, ideological, ethical, and political purpose. The truth of knowledge is directly related to its success or ability to serve practical purposes. What is true is useful or beneficial. This criterion of truth was held by thinkers like Jeremy Bentham and Karl Marx.11. What is Truth and Perspective?Truth, according to this theory, is comparable to an unlimited prism of faces, each of which reflects a reality that is original, innovative, and valid. Human reason cannot see all these perspectives simultaneously, although it can investigate and discover as many as possible, since this is precisely what truth is. Truth is completed gradually, that is, over history, through the unification or sum of all complementary perspectives. This is found in the theories of knowledge of thinkers like Friedrich W. Nietzsche and José Ortega y Gasset.12. What is Truth and Understanding?Truth is the understanding of the meaning of phenomena according to a specific method. The proper method of understanding meaning is called hermeneutics or the hermeneutical method. The starting point of this criterion of truth was the historicist philosophy of Wilhelm Dilthey. Dilthey distinguishes between Natural Science and Science of the Spirit. Natural Sciences are mathematics and physical sciences in general, all using the experimental method. Science of the Spirit or Science of Man covers various disciplines: History, Philosophy, Religion, Law, and Sociology. The object of the former is natural phenomena subject to laws. The purpose of the latter is human action and historical and cultural products.13. What is Truth as Consensus?Asserts that a proposition is true when it is possible to reach a unanimous or majority agreement within a community of partners. Truth must be understood as a rational agreement or consensus among a community of partners incorporating an acceptable argument, that dialogue on an issue or problem from a position free of prejudice and assumptions. Truth is conceived as the result or product of an intersubjective agreement within a qualified group of individuals. It has been maintained by philosophers such as Jürgen Habermas and Karl-Otto Apel.14. When it Comes to Scientific Criteria of Truth, Are They the Same for Experimental Science as for Formal Science? Why?There are two kinds of scientific knowledge or sciences: experimental sciences and formal sciences. Physics is the ideal of the experimental sciences, and mathematics is the ideal of formal sciences. In both cases, the criterion of truth is methodical in nature. Scientific knowledge is considered as such when its proposals have passed all the stages of the scientific method that make them valid or true. The method of experimental science is different from the method of formal sciences. In the case of experimental science, we talk about material truth as a test of a proposition. True propositions or empirical laws are checked (verified). In the case of formal sciences, we speak of formal validity or proof of a proposition. True propositions or theorems are proved (demonstrated). Testing and demonstration are different procedures: checking is to test empirically, while proving is to test deductively the consistency and internal need of a formal proposal.15. Explain the Four Stages of the Hypothetico-Deductive MethodObservation: Scientists always start by picking and choosing those empirical data considered relevant to solving a problem. Observation of facts or data collection is the starting point of the hypothetico-deductive method.Formulation of Hypotheses: After observation, the scientist formulates a hypothesis. A hypothesis is a supposition or conjecture providing a causal explanation of a problem.Derivation of Conclusions: You cannot check the generality of a hypothesis, but only the specific conclusions that are derived or inferred from it. In properly formulated hypotheses, a set of contrasting implications are always deduced. Implications are empirical predictions of specific facts that follow from the hypothesis and ultimately make it true or false.Contrast: The foundation of science is the systematic contrast of its proposals with the facts of experience. We try to verify that a hypothesis is true by contrasting its implications or predictions with the facts. If the results of the contrast are positive, we say that the hypothesis has been verified and confirmed. If the results are negative, we say that it has been falsified and therefore refuted. Verification and falsification are the two methodological procedures of hypothesis testing. A hypothesis can never be fully verified.16. What are the Limits of Scientific Knowledge?Epistemological Boundaries: The desire of man to know should not stop at the frontier of scientific knowledge.Technological Limits: Theoretical advances in science depend to a large extent on technological advances that allow for experimental control of the facts involved in the formulation of a hypothesis.Socioeconomic Boundaries: Knowledge becomes a social product subject to the productive mechanism of the market society. It is produced to satisfy needs and to obtain substantial economic benefits.Ethical Boundaries: The theoretical use of reason seeks to know the truth without any condition or limitation upon the practical. But perhaps you’re not entirely convinced that all the things that Aristotle is calling causes are really the sorts of things that you’re used to calling causes. You are right to be cautious, because what Aristotle seems to mean by a cause is more like what we would call an explanation. And more than this, Aristotle also has a very definite idea of what an explanation should look like. For Aristotle an explanation is an answer to a question of the form ‘why is S a P?’ where S is the subject of the enquiry and P is a property we see belongs to that subject; for example, ‘why is this statue brown (a brown thing?)’, ‘why is the moon eclipsed (an eclipsed thing?)’, ‘why is the child ugly?’, ‘why go walking?’, and so on. So what sort of thing will give an explanation of the observed fact that S is P? Here Aristotle refers back to his earlier investigations into logic where he showed the validity of such classic arguments as: Socrates is a man All men are mortal Socrates is mortal An argument such as this gives us the grounds, the best possible grounds, for believing that Socrates is mortal. It also, in Aristotle’s view, gives us the explanation for Socrates’s mortality. Socrates is mortal because he is a man and all men are mortal. Generalising on this insight, Aristotle claims that arguments of the form: S is M M is P S is P provide an explanation for the fact that S is P. Thus we say: Why is S a P? Because S is an M, and any M is a P. Now consider the sorts of things that make sense when we put them into the M position (this is called the middle term of an argument.) Aristotle thinks that all the things that can sensibly be put in there fall into one or another of his four classes of ‘causes.’ For example: ‘why is this statue brown?’ ‘Because it is bronze, and bronze is brown.’ That is the material cause of the brownness of the statue, and the deduction that it fits into goes thus: The statue is bronze Bronze is brown The statue is brown ‘Why is the moon eclipsed?)’ ‘Because it is darkened by earth’s shadow, and to be darkened by Earth’s shadow is to be eclipsed’ That is the formal cause. ‘Why is the child ugly?’ ‘Because the father is ugly and ugly fathers have ugly children.’ That is the efficient cause, and possibly the only cause that we would actually think of as a cause ‘Why go walking?’ ‘Because those who want to be healthy go walking, and we want to be healthy.’ That is the final cause. Aristotle’s view of scientific knowledge (epistēmē/episthmh) was of a collection of such deductions, and we can see the implications of this in certain statements such as that in Post. An. 1.2 where he says: We suppose ourselves to possess unqualified scientific knowledge of a thing, as opposed to knowing it in the accidental way in which the sophist knows, when we think that we know the cause on which the fact depends, as the cause of that fact and of no other, and, further, that the fact could not be other than it is. The last two conditions are really insisting upon the deductive form of knowledge. If we take the explanation of the brownness of the statue for example, having knowledge about this is being aware of the deduction from its being a statue via the middle term of it being bronze to its being brown. We know that the bronzeness is the cause of that fact and no other because, given the two premises, ‘the statue is bronze’ and ‘bronze is brown’, there is only one statement that follows inevitably to make a valid deduction, that is that ‘the statue is brown.’ And we know that the fact could not be other than it is because the deduction we have come up with in the explanation is a valid deduction, and it is thus impossible for the premises to be true and the conclusion to be false. Aristotle further claimed that there were conditions on the kinds of premises that can play the explanatory role required for scientific knowledge. He says: Assuming then that my thesis as to the nature of scientific knowing is correct, the premises of demonstrated knowledge must be true, primary, immediate, better known than and prior to the conclusion, which is further related to them as effect to cause. Unless these conditions are satisfied, the basic truths will not be 'appropriate' to the conclusion. Deduction there may indeed be without these conditions, but such deduction, not being productive of scientific knowledge, will not be demonstration. The point of these criteria is to eliminate trivial or irrelevant deductions that cannot give us scientific knowledge. For example, we don’t want to be able to say that Socrates is a man because Socrates is a man and all men are men. That doesn’t give us knowledge. Scientific knowledge is got only from deductions whose premises reveal the causal nature of the world. Such things are called demonstrations, and demonstration (apodeixis/apodeixis) is how we get scientific knowledge. We can’t look at all these criteria here to see what role they play, but I will make a couple of remarks. In the first place, it’s obvious why the premises have to be true. If they weren’t true then the demonstration might be valid but it would be unsound, and would therefore not give us knowledge. Yes, if all men were animals and all animals were green, then it would follow that all men are green; but of course, we don’t know that men are green because it just isn’t true that all animals are green. And we would have the same failure of knowledge if we had a true conclusion but with false premises. (You might recall that I talked about that sort of thing in the first lecture.) In the second place, when Aristotle says that the premises have to be better known than and prior to the conclusion, he goes on to ‘clarify’ that: … 'prior' and 'better known' are ambiguous terms, for there is a difference between what is prior and better known in the order of being and what is prior and better known to man. I mean that objects nearer to sense are prior and better known to man; objects without qualification prior and better known are those further from sense. Now the most universal causes are furthest from sense and particular causes are nearest to sense, and they are thus exactly opposed to one another. It’s not much a clarification, I know, but what he seems to be getting at is that some things are known more immediately to us through our senses – like the fact that that particular triangular patch of grass is green – but they are less certainly true, because they are not universally and eternally true. On the other hand some things that are not known immediately through our senses are, nevertheless, more certainly known when they are known – like the fact that a triangle has internal angles summing to 180o – because they are universal and eternal truths that we come to know through reason. The criterion for causes that we’re looking at now seems to be saying that in constructing a chain of premises and conclusions we are trying to climb up the ladder of generalisations, so to speak; that the causes should be more general than the subject and predicate being explained. For Aristotle, human life is marked by special varieties of knowledge and understanding. Where other animals can only know that things are so, humans are able to understand why they are so. Furthermore, humans are the only animals capable of deliberating in a way that is guided by a conception of a flourishing life. The highest types of human knowledge also differ in having an exceptional degree of reliability and stability over time. These special types of knowledge constitute excellences of the soul, and they allow us to engage in characteristic activities that are integral to a good human life, including the study of scientific theories and the construction of political communities. Aristotle’s central interest in epistemology lies in these higher types of knowledge. Among them, Aristotle draws a sharp division between knowledge that aims at action and knowledge that aims at contemplation, valuing both immensely. He gives a theory of the former, that is, of practically oriented epistemic virtues, in the context of ethics (primarily in the sixth book of the Nicomachean Ethics [Nic. Eth.], which is shared with the Eudemian Ethics [Eud. Eth.]), and he gives a theory of the latter both there and in the Posterior Analytics [Post. An.], where the topic of epistemology is not sharply distinguished from the philosophy of science. Lower types of knowledge and other epistemically valuable states are treated piecemeal, as topics like perception, memory and experience arise in these texts as well as in psychological, biological, and other contexts. Although Aristotle is interested in various forms of error and epistemic mistakes, his theory of knowledge is not primarily a response to the possibility that we are grossly deceived, or that the nature of reality is radically different from the way we apprehend it in our practical dealings and scientific theories. Instead, Aristotle takes it for granted that we, like other animals, enjoy various forms of knowledge, and sets out to enumerate their diverse standards, objects, purposes and relative value. He emphasizes the differences among mundane forms of knowledge such as perception and higher forms such as scientific theorizing, but he also presents an account on which the latter grows organically out of the former. His pluralism about knowledge and his sensitivity to the different roles various forms of knowledge play in our lives give his theory enduring relevance and interest. Table of Contents 1. Knowledge in General Knowledge in a broad sense (gnōsis, from whose root the word “knowledge” derives; sometimes also eidenai) is enjoyed by all animals from an early stage in their individual development (Generation of Animals [Gen. An.] I 23, 731a30–4). In Aristotle’s usage, it includes everything from a worm’s capacity to discriminate hot and cold to the human ability to explain a lunar eclipse or contemplate the divine (for representative usages, see Post. An. I 1, 71a1–2; II 8, 93a22; II 19, 99b38–9). However, Aristotle shows comparatively little interest in knowledge in this broad sense. The Aristotelian corpus has no surviving treatise devoted to knowledge in all generality, and there is no evidence that Aristotle ever authored such a text. His main interest is in more specific kinds of knowledge. Nevertheless, a few features of Aristotle’s view regarding knowledge in general deserve comment. First, it is relatively clear that he takes gnōsis to be at least factive (although this is disputed by Gail Fine). That is, if someone (or some animal) has gnōsis that something is the case, then that thing is true. Plausibly, Aristotle takes gnōsis to be not only true cognition, but cognition that is produced by a faculty like perception which reliably yields truths. This makes it tempting to compare Aristotle’s general view of knowledge with contemporary forms of reliabilism such as Ernest Sosa’s or John Greco’s, though the reliability of gnōsis is not a point Aristotle stresses. Second, Aristotle also treats most kinds of knowledge as relatives (Physics [Phys.] VII 3, 247b1–3). A relative, in Aristotle’s metaphysical scheme, is an entity which is essentially of something else (Cat. 7, 6a37). One example is that of a double, since a double is essentially the double of something else (Cat. 7, 6a39–b1). Likewise, knowledge is essentially knowledge of something-or-other (Cat. 7, 6b5), be it an external particular (De Anima [De An.] II 5, 417b25–7), a universal within the soul (De An. II 5, 417b22–3; compare Phys. VII 3, 247b4–5, 17–18), or the human good (Nic. Eth. VI 5, 1140a25–8). It is fundamental to Aristotle’s way of thinking about knowledge that it is in this way object directed, where the notion of object is a broad one that includes facts, particulars, theories and ethical norms. Aristotle frequently characterizes different types of knowledge by the types of objects they are directed at. Third, for Aristotle, knowledge generally builds upon itself. In many cases, learning amounts to reconceiving the knowledge we already have, or coming to understand it in a new way (Post. An. I 1, 71b5–8). Further, Aristotle notes that the knowledge we gain when we learn something is often closely connected to the knowledge that we need to already have in order to learn this. For instance, in order to gain a proper geometrical understanding of why a given triangle has internal angles that sum to 180 degrees, we must already know that triangles in general have this angle sum and know that this particular figure is a triangle, whereupon it may be asked: what is this if not already to know that the particular triangle has this angle sum (Post. An. I 1, 71a19–27; cf. Pr. An. II 21, 67a12–22)? Likewise, in order to arrive at knowledge of what something is, that is, of its definition, we must perform an inquiry that involves identifying and scrutinizing things of the relevant kind. That requires knowing that the relevant things exist; however, how can we identify these things if we do not know what defines instances of that kind (Post. An. II 7, 92b4–11; II 8, 93a19–22)? Aristotle identifies such questions with a famous puzzle raised in Plato’s Meno: how can we search for anything that we do not already know (Post. An. I 1, 71a29, compare Pr. An. II 21, 67a21–2)? Either we already know it, in which case we do not need to look for it, or we do not know it, in which case we do not know what we are seeking to learn and we will therefore not recognize it when we have found it (Meno 80e). As David Bronstein and Gail Fine have shown, much of Aristotle’s epistemology is structured around this challenge. Aristotle is confident that we can distinguish the prior knowledge required for various types of learning from what we seek to learn; hence, for Aristotle, the puzzle in the Meno amounts to a challenge to articulate what prior knowledge various kinds of learning depend upon. The picture of learning and inquiry we get from Aristotle is, consequently, a thoroughly cumulative one. Typically, we learn by building on and combining what we already know rather than going from a state of complete ignorance to a state of knowledge. Aristotle is concerned to detail the various gradations in intellectual achievement that exist between mundane knowledge and full scientific or practical expertise. This approach, however, raises a different worry. If we can only gain knowledge by building on knowledge we already have, then the question arises: where does our learning begin? Plato’s answer, at least as Aristotle understands it, is that we have innate latent beliefs in our souls which we can recollect and hence come to know (Post. An. II 19, 99b25–6). Aristotle rejects this view, taking it to require, implausibly, that we have more precise cognitive states in us than we are aware of (Post. An. II 19, 99b26–7). Instead, he adverts to perception as the type of knowledge from which higher cognitive states originate (Post. An. II 19, 99b34–5; cf. Met. I 1, 980a26–7). At least the most rudimentary types of perception allow us to gain knowledge without drawing on any prior knowledge. Thus, for Aristotle, everything learned (both for us and for other animals) starts with perception, such that any lack in perception must necessarily result in a corresponding lack in knowledge (Post. An. I 18, 81a38–9). Depending on the intellectual capabilities of a given animal, perception may be the highest type of knowledge available, or the animal may naturally learn from it, ascending to higher types of knowledge from which the animal can learn in turn (Post. An. II 19, 99a34–100a3; Met. I 1, 980a27–981b6). 2. Perception For Aristotle, perception is a capacity to discriminate that is possessed by all human and non-human animals (Post. An. II 19, 99b36–7; De An. II 2, 413b2; Gen. An. I 23, 731a30–4), including insects and grubs (Met. I 1, 980a27–b24; De An. II 2, 413b19–22). Every animal possesses at least the sense of touch, even though some may lack other sensory modalities (De An. II 2, 413b8–10, 414a2–3). Each sense has a proper object which only that perceptual modality can detect as such (De An. II 6, 418a9–12): color for sight, sound for hearing, flavor for taste, odor for smell and various unspecified objects for touch (De An. II 6 418a12–14). For Aristotle, perception is not, however, limited to the proper objects of the sensory faculties. He allows that we and other animals also perceive a range of other things: various common properties which can be registered by multiple senses, such as shape, size, motion and amount (De An. II 6, 418a17–18), incidental objects such as a pale thing or even the fact that the pale thing is the son of Diares (De An. II 6, 418a21), and possibly even general facts such as that fire is hot (Met. I 1, 981b13; but see below). Aristotle holds that we are never, or at least most infrequently, in error about the proper objects of perception, like color, sound, flavor, and so on (De An. II 6, 418a12; De An. III 3, 428b18–19). We are, however, regularly mistaken about other types of perceptual objects (De An. III 3, 428b19–25). While I can be mistaken, for instance, about the identity of the red thing I am perceiving (Is it an ember? Is it a glowing insect? Is it just artifact of the lighting?), I usually am not mistaken that I am seeing red. In Aristotle’s language, this is to say that I am more often in error regarding the incidental objects of perception (De An. III 3, 428b19–22). The common objects of perception are, in his view, even more prone to error (De An. III 3, 428b22–5); for example, I can easily misperceive the size of the red thing or the number of red things there are. Aristotle gives an account of the way perception works which spans physiology, epistemology and philosophy of mind. In order for perception to occur, there must be an external object with some quality to be perceived and a perceptual organ capable of being affected in an appropriate way (De An. II 5, 417b20–1, 418a3–5). Aristotle posits that each sense organ is specialized and can only be affected in specific ways without being harmed. This explains both why different sensory modalities have different proper objects and why overwhelming stimuli can disable or damage these senses (De An. II 12, 424a28–34; III 2, 426a30–b3; III 13, 435b4–19). Perception takes place when the sensory organ is altered within its natural bounds, in such a way as to take on the sensible quality of the object perceived. In this way, the perceptual organ takes on the sensible form of the object without its matter (De An. III 12, 424a17–19). Much debate has revolved around whether Aristotle means that the organ literally takes on the sensible property (whether, for instance, the eye literally becomes red upon seeing red), or whether Aristotle means that it does so rather in some metaphorical or otherwise attenuated sense. Some animals, Aristotle holds, have no other form of knowledge except perception. Such animals, in his view, only have knowledge when they are actually perceiving (Post. An. II 19, 99b38–9); they know only what is present to them when their perceptual capacities are in play. The same holds for human perceptual knowledge. If we can be said to have knowledge on account of our merely perceiving something, then this is knowledge we have only at the time when this perception is occurring (Pr. An. II 21, 67a39–67b1; compare Met. Z 15, 1039b27–30). A person has, for instance, perceptual knowledge that Socrates is sitting only when actually perceiving Socrates in a seated position. It follows that we cease to have this knowledge as soon as we cease to perceive the thing that we know by perception (Nic. Eth. VI 3, 1139b21–22; Topics [Top.] V 3, 131b21–22). For Aristotle, this represents a shortcoming of perceptual knowledge. Perceptual knowledge is transitory or unstable in a way that knowledge ideally is not, since knowledge is supposed to be a cognitive state which we can rely upon (Categories [Cat.] 8, 8b27–30; Posterior Analytics [Post. An.] I 33, 89a5–10). Perception is also lacking as a form of knowledge in other ways. Higher types of knowledge confer a grasp of the reasons why something is so, but perception at best allows us to know that something is so (Metaphysics [Met.] I 1, 981b12–13; Post. An. I 31, 88a1–2). The content of perception is also tied to a particular location and time: what I perceive is that this thing here has this property now (Post. An. I 31, 87b28–30). Even if the content of my perception is a fact like the fact that fire is hot (rather than that this fire is hot), a perceptual experience cannot, according to Aristotle, tell me that fire is in general hot, since that would require me to understand why fire is hot (Met. I 1, 981b13). Hence, while knowledge begins with perception, the types of knowledge which are most distinctively human are the exercise of cognitive abilities that far surpass perception (Gen. An. I 23, 731a34–731b5). In creatures like us, perception ignites a curiosity that prompts repeated observation of connected phenomena and leads us through a series of more demanding cognitive states that ideally culminate in scientific knowledge or craft (Met. I 1, 980a21–27; Post. An. I 31, 88a2–5; Post. An. II 19, 100a3–b5). The two most important of these intermediate states are memory and experience. Let us turn to these, before considering the types of knowledge that Aristotle considers to be virtues of the soul. 3. Memory For Aristotle, perception provides the prior knowledge needed to form memories. The capacity to form memories allows us to continue to be aware of what we perceived in the past once the perceived object is no longer present, and thus to enjoy forms of knowledge that do not depend on the continued presence of their objects. Learning from our perceptions in order to form memories thus constitutes an important step in the ascent from perception to higher types of knowledge. With the formation of a memory, we gain epistemic access to the contents of our perceptions that transcends the present moment and place. Aristotle distinguishes memory from recollection. Whereas recollection denotes an active, typically conscious “search” (On Memory and Recollection [De Mem.] 453a12), memory is a cognitive state that results passively from perception (De Mem. 453a15). In order to form a memory, the perceived object must leave an impression in the soul, like a stamp on a tablet (De Mem. 450a31–2). This requires the soul to be in an appropriate receptive condition, a condition which Aristotle holds to be absent or impaired in both the elderly and the very young (De Mem. 450a32–b7). Aristotle however denies that a memory is formed simultaneously with the impression of the perceived object, since we do not remember what we are currently perceiving; we have memories only of things in the past (De Mem. 449b24–26). He infers that there must be a lapse of time between the perceptual impression and the formation of a memory (De Mem. 449b28, 451a24–5, 29–30). The fact that memory requires an impression raises a puzzle, as Aristotle notices: if perception is necessarily of a present object, but only an impression left by the object is present in our memory, do we really remember the same things that we perceive (De Mem. 450a25–37, 450b11–13)? His solution is to introduce a representational model of memory. The impression formed in us by a sensory object is a type of picture (De Mem. 450a29–30). Like any picture, it can be considered either as a present artifact or as a representation of something else (De Mem. 450b20–5). When we remember something, we access the representational content of this impression-picture. Memory thus requires a sensory impression, but it is not of the sensory impression; it is of the object this impression depicts (De Mem. 450b27–451a8). While the capacity to form memories represents a cognitive advance over perception thanks to its cross-temporal character, memory is still a rudimentary form of knowledge, which Aristotle takes not to belong to the intellect strictly speaking (De An. I 4, 408b25–9; De Mem. 450a13–14). Memories need not possess any generality (although Aristotle does not seem to rule out the possibility of remembering generalizations), nor does memory as such tell us the reasons why things are so. A more venerable cognitive achievement than memory which, however, still falls short of full scientific knowledge or craft, is what Aristotle calls “experience” (empeiria). 4. Experience Memories constitute the prior knowledge required to gain experience, which we gain by means of consciously or unconsciously grouping memories of the same thing (Post. An. II 19, 100a4–6; Met. I 1, 980b28–981a1). The type of knowledge we gain in experience confers practical success; in some cases, the practical efficacy (which is not to say the overall value) of this type of knowledge surpasses that of scientific knowledge (Met. I 1, 981a12–15). Aristotle emphasizes the pivotal role of experience in the acquisition of knowledge of scientific principles (Pr. An. I 30, 46a17–20; II 19, 100a6), but he considers the proper grasp of scientific principles to be a strictly different (and more valuable) kind of knowledge. Experience thus sits mid-way between the awareness of the past we enjoy by way of memory and the explanatory capacity we have in scientific knowledge. His characterization of the content of the knowledge we have in experience has given rise to divergent interpretations. He contrasts experience with the “art” that a scientifically informed doctor has as follows: [T]o have a judgment 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. (Met. I 1, 981a7–12, trans. Ross) On one traditional reading, the contrast Aristotle wishes to draw here concerns the generality of what one knows in experience and in scientific knowledge respectively. A person with scientific knowledge knows a universal generalization (for example, “all phlegmatic people are helped by such-and-such a drug when burning with a fever”), whereas a person with experience knows only a string of particular cases which fall under this generalization (“Socrates was helped by such-and-such a drug when burning with a fever”, “Callias was helped by such-and-such a drug when burning with a fever”, and so on). What distinguishes the experienced person from someone who merely remembers these things, however, is that the memories of the experienced person are grouped or connected (Post. An. II 19, 100a4–6; Met. I 1, 980b28–981a1). Precisely what this grouping or connection comes to is not made clear by the text, but one point suggested by the passage above is that it allows one to competently treat new cases by comparison with old ones. An experienced person would thus, in this example, be able to prescribe the correct drug if, for instance, Polus should arrive with a fever and be of the relevant constitution to benefit from it. The experienced person will do this, however, by comparing Polus with Socrates and Callias, not by means of an explicit grasp of the universal generalization that all phlegmatic people benefit from this drug when suffering from a fever (or even that most of them do). The person with experience thus has a capacity to generalize, but not yet any explicit grasp of the underlying generalization. One problem for this reading is that outside of this passage Aristotle describes generalizations, even scientifically accurate ones, as things known by experience. In particular, Aristotle describes scientific explananda as things known by experience, where these are taken to be general facts like the fact that round wounds heal more slowly (Post. An. I 13, 79a14–16 with Met. I 1, 981a28–30; Historia Animalium [Hist. An.] VIII 24, 604b25–7; Pr. An. I 30, 46a17–27; and, possibly, Post. An. II 19, 100a3–8). According to Pieter Sjoerd Hasper and Joel Yurdin, the content of experience does not differ from that of scientific knowledge in being any less general or less accurate than scientific knowledge. Instead, what one has experience of is fully precise scientific facts, but what one lacks is a grasp of their causes. On this view, Aristotle’s point in the passage quoted is that someone with experience knows that a certain treatment is effective for all feverish patients who are phlegmatic, but the person does not know why. Experience thus gives one knowledge of scientific explananda; further inquiry or reflection is however needed to have properly scientific knowledge, which requires a grasp of the causes of what one knows by experience. On either of these interpretations, experience can be seen to contribute a further dimension to the temporal reach of our knowledge. Where memory allows us to retain perceptual knowledge, and thus extends our knowledge into the past, experience extends our knowledge into the future. A person with experience has not only a retrospective grasp of what has cured certain patients; this person has learned from this knowledge what will cure (or is likely to cure) the next patient with the relevant malady, either by direct comparison with previous cases or by grasping the relevant generalization. Since experience presupposes memory, an experienced person has knowledge whose reach extends both backward and forward in time. 5. Knowledge as an Intellectual Virtue A virtue, for Aristotle, is a particular respect in which a thing is excellent at being what it is or doing what it is meant to do. If, with Aristotle, we suppose that not only our characters but also our intellects can be in better or worse conditions, it makes sense to talk about virtues of intellect as well as virtues of character. Unlike contemporary virtue epistemologists, who tend to identify knowledge as a type of success issuing from intellectual virtues, Aristotle directly identifies the most desirable types of knowledge with certain intellectual virtues. This has an important effect on his epistemology. A

a different science, on the other (Post. An. I 7, 75b37–40). Two requirements for demonstration, then, are that the premises be true and that they be non-accidental facts belonging to the relevant science. Assuming that all principles of a science are true and non-accidental, this reduces to the condition that a demonstration be from principles belonging to the relevant science. This, however, is still not a sufficient condition for an argument to be a demonstration. Aristotle famously contrasts the following two arguments (Post. An. I 13, 78a30–7): Argument One Things that do not twinkle are near; the planets do not twinkle; therefore, the planets are near. Contents: introduction · the theoretical · the productive · the practical · further reading and references · links · how to cite this piece Aristotle, along with many other classical Greek thinkers, believed that the appropriateness of any particular form of knowledge depends on the telos, or purpose, it serves. In brief: The purpose of a theoretical discipline is the pursuit of truth through contemplation; its telos is the attainment of knowledge for its own sake. The purpose of the productive sciences is to make something; their telos is the production of some artifact. The practical disciplines are those sciences which deal with ethical and political life; their telos is practical wisdom and knowledge. (Carr & Kemmis 1986: 32) This way of separating different areas of knowledge can be seen, for example, in the way that we might view 'pure maths' (theoretical), tool-making (productive), and social work training (practical). Thus, how we see knowledge and the purpose it serves has a profound effect on the way we view education. It leads to differing understandings of curriculum content and method. The theoretical: pursuing truth for its own sake The form of thinking appropriate to theoretical activities, according to Aristotle, was contemplative. It involves mulling over facts and ideas that the person already possesses. This is how one writer describes it: The Aristotelian contemplator is a man who has already acquired knowledge; and what he is contemplating is precisely this knowledge already present in his mind… the contemplator is engaged in the orderly inspection of truths which he already possesses; his task consists in bringing forward from the recesses of his mind, and arranging them fittingly in the full light of consciousness. (Barnes 1976: 38) This for Aristotle was the highest form of human activity. It was the ultimate intellectual virtue: a life of unbroken contemplation being something divine. This image can bring to mind pictures of holy men and women reflecting on some eternal truth or of people meditating. The whole thing has a slightly unworldly feel. However, this not a particularly accurate reflection of Aristotle's thinking. The life of the contemplator was not to be a life of physical denial. Nor was it a matter of letting the mind roam at random. The good person, or expert human, in his view was an 'ace rationalist' (Barnes 1976: 37). Actions were to be based on sound reasoning or detailed reflection. The role of the educators is, presumably, to help people to gain the knowledge on which they are to reflect; to train them in the disciplines of contemplation; and to develop their character so that they became disposed to this form of activity. 'Intellectual virtue owes both its inception and growth chiefly to instruction, and for this reason needs time and experience' (Aristotle 1976: 91). Education involves training people from childhood to 'like and dislike the proper things'. But there is also something more here. Aristotle places this discipline on a pedestal. It is, for him, the highest form of human activity. Educators, if they are to follow this line, must place the gaining of knowledge for its own sake above, for example, the cultivation of affection and sympathy for other people. This is something that many of us would disagree with. As Barnes comments, human excellence runs in a broader and more amiable stream than Aristotle imagined. The fulfilled person will be a lover of others and an admirer of beauty as well as a contemplator of truth: 'a friend and an aesthete as well as a thinker' (Barnes 1976: 42). The productive: making things If the form of thinking associated with theoretical activities was contemplative, the kind of knowledge and enquiry involved in productive disciplines was a 'making' action or poietike. Aristotle associated this form of thinking and doing with the work of craftspeople or artisans. Thus, the making action is not simply seen as mechanical, but also as involving some creativity in an artistic sense. (Interestingly the English word 'poetry' is derived from the Greek poietike.) This making action is dependent upon the exercising of skill (what the Greeks called techne) and it always results from the idea, image or pattern of what the artisan wants to make. In other words the worker has a guiding plan or idea. For example, potters will have an idea of the article they want to make. While working, they may make some alterations, develop an idea and so on. But they are restricted in this by their original plan. There is a finite range of options. We can view this process as follows (adapted from Grundy 1987: 24): People begin with a plan or design; an idea of the object they want to make. eidos Their frame of mind is that of the artisan or craftsperson as is disposed to use of skills. techne Together these provide the basis for action – the 'making action'. poietike The outcome is a thing or object. product This form of reasoning is very instrumental. It is dominated by the plan or design and actions are thus directed towards the given end. As Grundy comments: The eidos can only come into being through the techne (skill) of the practitioner, but, in turn, it is the eidos which prescribes the nature of the product, not the artisan's skill. The outcome of poietike (making action) is, thus, some product. This does not mean that the product will always replicate the eidos. The artisan's skill may be deficient or chance factors may be at work. The product will be judged, however, according to the extent to which it 'measures up' to the image implicit in the guiding eidos. (Grundy (1987: 24) Put in terms of discussions of process and product, this approach can be seen to be focused around the latter. The practical: making judgments The third form of enquiry is what might be called the 'practical sciences'. These were originally associated with ethical and political life. Their purpose was the cultivation of wisdom and knowledge. They involve the making of judgments and human interaction. The form of reasoning associated with the practical sciences is praxis or informed and committed action. This is a term that many educators encounter through the work of Paulo Freire and has been given a number of different political meanings, particularly within Marxist traditions of thinking. To understand what we mean by it here it is useful to reflect on what we have already said about the theoretical and the productive, and to think about these in relation to what we mean by 'practice'. Practice is often portrayed at a very simple level as the act of doing something. It is frequently depicted in contrast to something called theory – abstract ideas about some particular thing or phenomenon. Theory is what you learn in college and then apply to the situations you find in your work. The result is practice. People often talk about professional knowledge as if it were based on theory from which can be derived general principles (or rules). These in turn can be applied to the problems of practice. In this way theory is 'real' knowledge while practice is the application of that knowledge to solve problems (hence the phrase 'applied social science'). This implies that the practitioner is in a sense always a passive implementor, since ends are pre-given and means decided by the theorist. At best practitioners are skilled artisans implementing the 'design' of others. We can see in this what we have already been examining: the elevating of theory, and use of a technical disposition – the productive sciences. Theory and practice are not opposites or separate entities. 'Practice' cannot be lacking theory. Similarly, it is difficult to conceive of 'theory' that is purely descriptive and devoid of reference to purposeful action. In other words, practice is soaked in theory. It is a constant process of theory making, and theory testing. Thus, it is in this sense that we can begin to talk about practice as praxis – informed action. As Freire put it 'we find two dimensions, reflection and action, in such radical interaction that if one is sacrificed – even in part – the other immediately suffers' (1972: 60). Perhaps the best way of approaching practical reasoning is to look at the starting point. Where the productive began with a plan or design, the practical cannot have such a concrete starting point. What we begin with is a question or situation. We then start to think about this situation in the light of our understanding of what is good or what makes for human flourishing. Thus, for Aristotle, praxis is guided by a moral disposition to act truly and rightly; a concern to further human well being and the good life. This is what the Greeks called phronesis and requires an understanding of other people. We can represent this as follows (adapted from Grundy 1987: 64): People begin with a situation or question which they consider in relation to what they think makes for human flourishing. the good They are guided by a moral disposition to act truly and rightly. phronesis This enables them to engage with the situation as committed thinkers and actors. praxis The outcome is a process. interaction In praxis there can be no prior knowledge of the right means by which we realize the end in a particular situation. For the end itself is only concretely specified in deliberating about the means appropriate to a particular situation (Grundy 1987: 147). These two statements capture something of the fluidity of the process. As we think about what we want to achieve, we alter the way we might achieve that. As we think about the way we might go about something, we change what we might aim at. There is a continual interplay between ends and means. In just the same way there is a continual interplay between thought and action. What this process involves is a round of interpretation, understanding and application. It is something we engage in as human beings and it is directed at other human beings. Further reading and references Carr, W. & Kemmis, S. (1986) Becoming Critical. Education, knowledge and action research, Lewes: Falmer Press. Includes a very helpful overview of Aristotle's view of knowledge. Grundy, S. (1987) Curriculum: Product or Praxis, Lewes: Falmer. 209 + ix pages. Good discussion of the nature of curriculum from a critical perspective. Grundy starts from Habermas' theorisation of knowledge and human interest and makes use of Aristotle to develop a models of curriculum around product, process and praxis. References Aristotle (1976) The Nicomachean Ethics ('Ethics'), Harmondsworth: Penguin. Barnes, J. (1976) 'Introduction' to Aristotle The Nicomachean Ethics ('Ethics'), Harmondsworth: Penguin. Freire, P. (1972) Pedagogy of the Oppressed, Harmondsworth: Penguin. Links Aristole Curriculum Dewey Image of Aristotle – wikimedia commons – jastrow – pd. How to cite this piece: Smith, M. K. (1999). 'Aristotle on knowledge', The encyclopedia of pedagogy and informal education. [. Retrieved: insert date]. © Mark K. Smith 1999