

Episteme, Knowledge and Understanding

John Greco

Saint Louis University

- **Introduction.**
- The target concept:

Understanding requires the grasping of explanatory and other coherence-making relationships in a large and comprehensive body of information. One can know many unrelated pieces of information, but understanding is achieved only when informational items are pieced together by the subject in question. (Kvanvig [2003], p. 192)

understanding . . . is the appreciation or grasp of order, pattern, and how things ‘hang together.’ Understanding has a multitude of appropriate objects, among them complicated machines, people, subject disciplines, mathematical proofs, and so on. Understanding something like this requires . . . appreciation . . . or awareness of how its parts fit together, what role each one plays in the context of the whole, and of the role it plays in the larger scheme of things. (Riggs [2003], p. 217)

- Thesis: The traditional, Aristotelian account of *episteme* fares well as an account of *understanding*. Better: An appropriately updated, neo-Aristotelian account fares well.
- Outline:
 1. Aristotle's account of *episteme* sketched.
 2. A neo-Aristotelian account of *understanding*.
 3. Two objections to the neo-Aristotelian account.

1. Aristotle's account of *episteme* sketched.

- *Episteme* (knowledge, scientific knowledge, understanding) consists in knowledge of causes. To have *episteme* is to know the cause of a thing.
- To have *episteme* regarding some fact that p is to know that p is the case, in a sense of "know" that entails having an account of why p is the case.
- To have an account is to be able to (knowledgeably) cite causes. So again, *episteme* consists in knowledge of causes.

To have scientific knowledge, then, is to have explanatory understanding: not merely to 'know' a fact incidentally, to be able to assent to something which is true, but to know *why* it is a fact. The proper function of science is to provide explanations (R. J. Hankinson, *Cambridge Companion to Aristotle*, p. 110)

- Notice the tight relations between a) *episteme*, b) knowing the cause, c) being able to cite the cause, c) having an account or explanation, and d) having the answer to a "Why" question.
- Our contemporary concept of *understanding* displays similar tight relations. This is a clue to a close relationship between Aristotle's *episteme* and our *understanding*.

- Aristotle's notion of four causes: efficient, material, formal, and final.
- Think of a complex net of modally strong dependency relations. According to Aristotle, to have *episteme* regarding some thing is to know its location in such a net.

2. A neo-Aristotelian account of *understanding*.

- Thesis: We can "update" Aristotle's account of *episteme* so as to turn it into a plausible account of our *understanding*.

First update: we replace Aristotle's "four causes" with dependency relations in general. Hence we have a) efficient causal relations, b) constitutive relations, c) essential relations and d) teleological relations, but also e) other part-whole or mereological relations, f) logical and mathematical relations, g) supervenience relations of varying strength. This list is meant to be neither exclusive nor exhaustive.

- Again, think of a complex net of modally strong dependency relations. According to the present account, to have *understanding* regarding something is to know its location in such a net.
- The present account accommodates close relations between a) *understanding*, b) knowing the cause, c) being able to cite the cause, c) having an account or explanation, and d) having the answer to a "Why" question.

A nice feature: unified accounts of explanation and understanding.

- The account makes causal explanation (in our more restricted sense of "cause") a species of explanation in general. To have an explanation is to be able to cite appropriate dependency relations. To have a causal explanation is to be able to cite causal relations.
- The account makes scientific understanding (in our more restricted sense of "science") a species of understanding in general, including mathematical understanding, philosophical understanding, and practical understanding.

Second update: we stress that understanding consists in *systematic* knowledge of dependency relations. Put differently, understanding consists in knowledge *of a system* of dependency relations.

- This accommodates the idea that understanding, unlike mere knowledge, cannot be isolated.
- It accommodates the idea that understanding comes in degrees, in terms of both breath and depth.

- It accommodates the idea that understanding can have "non-propositional" objects, such as maps and models, as well as "propositional" objects such as theories and narratives.

That is because all of these involve complex representations of relations, or representations of complexes of relations.

- Finally, our two "updates" together accommodate the close relations between a) understanding, b) knowledge how to do something, and c) knowing how something works.

Notice that "knowledge how to do something" is ambiguous between a) having cognitive knowledge of how to do something, and b) being able to do something oneself. For example, the old, out of shape gymnastics coach "knows how" to do a standing back flip.

Understanding tracks the former.

So far, we have that understanding consists in a systematic knowledge of dependency relations, where the latter may be of various sorts.

This allows **a further distinction** among various objects of understanding, one that will become important later.

Understanding can take as its object:

- a. A system of "real" relations, or relations "in the world." For example: an ecosystem, an economy, a machine, a historical event.
- b. A representation of a real system. For example: a theory, a narrative, a model, a set of equations.
- c. The relations between a real system and a representation. For example: relations between a model and the economy that it represents, relations between a theory and a causal process that it represents, relations between a diagram and a machine that it represents, relations between a narrative and a historical event that it represents.

In each case, we can make a distinction between *the object* of understanding and *the vehicle* of understanding, i.e. between the *thing* understood and its *representation*.

- In case a, understanding will involve a representation of some part of "the world".
- In case b, understanding will involve a representation of a representation.
- In case c, understanding will involve a representation of a relation between representation and world.

These distinctions are sometimes confused in the literature, or at least not clearly noted. For example. "Understanding Newtonian physics" is ambiguous between a-c.

- **To summarize:** Understanding consists in a systematic knowledge of dependency relations, where dependency relations can be of various sorts, including "real" relations among parts of the world, conceptual and logical relations among parts of a theory, and semantic relations between theory and world.

3. Two objections to the neo-Aristotelian account of understanding.

a. Understanding can't be a kind of knowledge, because understanding is not factive (whereas knowledge is).

b. Understanding can't be a kind of knowledge, because understanding can be Gettiered (whereas knowledge can't be).

a. Elgin and the factivity of understanding.

Elgin's idea that understanding need only be "true enough." True enough vs. strictly true.

- *Ceteris paribus* claims: Many lawlike claims in science obtain only ceteris paribus. The familiar law of gravity

$$F = Gm_1m_2/r^2$$

is not universally true, for other forces may be in play. The force between charged bodies, for example, is a resultant of electrical and gravitational forces. Nevertheless, we are not inclined to jettison the law of gravity.

- *Idealizations*: Some laws never obtain. They characterize ideal cases that do not, perhaps cannot, occur in nature. The ideal gas law represents gas molecules as perfectly elastic spheres that occupy negligible space and exhibit no mutual attraction. There are no such molecules.
- *Curve smoothing*: Ordinarily, each data point is supposed to represent an independently ascertained truth. (The temperature at t_1 , the temperature at t_2 , . . .) . . . But the data rarely fall precisely on the curve adduced to account for them. The curve then reveals a pattern that the data do not instantiate . . .

Reply: Our distinctions between various objects of understanding allow us to say that understanding tracks knowledge, and is in that sense factive: "S understands that p" always entails "S knows that p," and hence that p is true.

Case 1. S knows what the ideal gas laws says (i.e. S knows relevant facts about the representation), S knows that the ideal gas law is an idealization of how actual gases behave in the world (i.e. S knows relevant facts about the representation-world relation), and S knows that actual gases behave so as to approximate the ideal gas law (i.e. S knows relevant facts about the world).

In all of these instances, S has understanding as well-- S understands the relevant "object," and understands the relevant facts about the object of understanding.

Case 2. S does know what the ideal gas law says, but does not know that it is supposed to be an idealization. Accordingly, S knows relevant facts about the representation, but S does not know relevant facts about the representation-world relation, and S does not know relevant facts about the world (for example, that actual gases behave only so as to approximate the ideal gas law).

But with these distinctions in place, knowledge and understanding seem to come and go together.

- S understands the representation (the law-statement) insofar as she has systematic knowledge of what it means.
- S does not understand the relation between the law-statement and the world insofar as she lacks relevant knowledge (that the law is an idealization of what goes on in the world).
- S does not understand the behavior of gases in the world insofar as she lacks relevant knowledge (that gases in the world do not instantiate the law).

In fact, S not only *lacks* understanding in the latter two cases, but actually *misunderstands* the relation between the law-statement and the world, and *misunderstands* the behavior of gases in the world.

- Finally, Elgin notes that we *talk* of understanding that is not strictly true, but true enough.

For example, we say that, even in Case 2, S understands *something* of the behavior of gases, even if what he believes about the gases is strictly false.

But we talk about knowledge in the same way. Thus, let p be *that it is 3 o'clock*. We say, "S knows that p ," even when p is strictly false, because it is in fact 3:01. Why? Because p is "true enough." Similarly for "I know she is 6ft tall" and "You know he is always on time."

It is plausible that the semantics and pragmatics of "knows" and "understands" sway together in these respects.

b. Kvanvig's Comanche case.

The case:

Suppose you pick up a textbook on Native American History and read through a chapter documenting the Comanche dominance of the southern plains, until eventually you seem genuinely to understand why the Comanches dominated the southern plains. But suppose as well that while the book you happened to pick up is accurate, most other books on this topic are full of errors. If you had picked up one of these other books instead (and we can imagine that they are all within easy reach!), your beliefs about the Comanches would have been almost entirely false. (Adapted by Grimm [2006], p. 519)

Kvanvig's diagnosis:

The basic idea here is that, though knowledge is incompatible with a certain kind of epistemic luck, understanding is not. Upon learning of the disturbed etiology of beliefs about the Comanches, as in the case imagined here, we might say that the person has true beliefs or even true justified beliefs, but no knowledge, if we have heeded our lessons from Gettier . . . But we needn't say the same thing about the claim of understanding. If the etiology were as imagined, one would be lucky to have any understanding at all of the Comanche dominance of the southern plains. So such understanding would count as understanding not undermined by the kind of luck in question. (Kvanvig [2003], pp. 198–9)

But our distinctions at least allow an alternative diagnosis. On this alternative, understanding and knowledge again go together.

a. Regarding the story (the representation), S has both systematic knowledge and understanding. S knows how the story goes, and understands it.

b. Regarding the representation-world relation, S lacks systematic knowledge. For example, S does not know that the story is true. But so too does S lack understanding that the story is true.

c. Regarding the actual history, S again lacks systematic knowledge. For example, S does not know that the Comanche's had superior weapons, and that this was a partial cause of Comanche successes in wars against other nations. (That is Kvanvig's point.) But so too, we may now say, S lacks understanding here.

The *appearance of understanding* is explained by S's understanding of the story, i.e. the representation. Hence we are not forced to accept Kvanvig's claim that S has understanding without knowledge.

Conclusion.

A neo-Aristotelian account of understanding -- that understanding consists in systematic knowledge of dependency relations -- has many advantages. For example, the account accommodates and explains important relations between understanding, explanation, knowledge why, and knowledge how. Moreover, a distinction among various kinds of dependency relation, and an attendant distinction regarding possible objects of understanding, gives us resources for rejecting two pressing objections against the neo-Aristotelian account. Namely, we may answer the objection that knowledge (but not understanding) is factive, and the objection that understanding (but not knowledge) can be Gettiered.

Thank you!