

## Understanding and its Relation to Knowledge

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*Abstract:* Is understanding the same as or at least a species of knowledge? This question has to be answered with respect to each of three types of understanding and of knowledge. I argue that understanding-*why* and *objectual* understanding are not reducible to one another and neither identical with nor a species of the corresponding or any other type of knowledge. My discussion reveals important characteristics of these two types of understanding and has consequences for *propositional* understanding.

Epistemology's traditional focus on propositional knowledge has recently been challenged. There is a growing insight that understanding rather than knowledge is our main cognitive goal. It has been argued that acknowledging this admits avoiding the value problem for knowledge (Kvanvig 2003; Pritchard 2010), identifying intellectual virtues (Riggs 2003), accommodating science (Elgin 2007) and defending morality (Hills 2010). The still little literature about the nature of understanding is primarily concerned with its relation to knowledge. Outside epistemology, particularly in the philosophy of science, the standard view is that understanding is a species of knowledge; within epistemology, the standard view is that understanding is neither identical with nor a species of knowledge (Grimm 2006, 515–4).

In this debate, it is not always duly acknowledged that understanding and knowledge come in at least three varieties. Even though ordinary language is not always a reliable guide, they are typically classified in terms of the grammatical form of the ascription as understanding- or knowledge-*that*, *-wh* and *objectual* understanding or knowledge. In this paper, I will compare these types of understanding with each other and with different types of knowledge. Since it is rare to talk of understanding that *p*, I focus on understanding-*why* (the most important form of understanding-*wh*) and objectual understanding and argue that they are not reducible to one another and neither identical with nor even a species of the corresponding or any other type of knowledge. My discussion reveals important characteristics of these types of understanding and has consequences for propositional understanding and its relation to knowledge.

### 1. Understanding-why

Understanding why *p* is neither equivalent with knowing that *p* nor with knowing why *p*. Obviously, you can know that the global surface temperature has increased without understanding why. Testimonial cases show that you can even know why it has increased without understanding why. Suppose a climate scientist explains to you that it has increased mainly because of the increasing concentrations of greenhouse gases. If he is right and you have good reasons to believe in his reliability, you know why the global surface temperature has increased. But as long as you have no grasp of how increasing concentrations of greenhouse gases can cause global warming you do not understand why the global surface temperature has increased.

When you know why *p* (where *q* is why *p*), you correctly *believe* that *p* because of *q*. When you understand why *p*, you additionally have a *grasp* of how *q* can cause *p*. Grasping *q* as the cause or reason why *p* is not the same as correctly believing that *p* because *q* and experiencing a revelation. However strong your experience of revelation is when you know that *p* because of *q*, you do not understand why *p* if you do not have certain abilities. Modifying a suggestion

by Hills (2010, 194–5), let us say that if you understand why  $p$  (and  $q$  is why  $p$ ), then you are able (1) to comprehend and render an explanation why  $p$ , which involves an explanatory story about how  $q$  can cause or be a reason why  $p$ , (2) draw the conclusion that  $p$  from the information that  $q$ , and (3), for some  $p^*$  and  $q^*$ , similar but not identical to  $p$  and  $q$ , draw the conclusion that  $p^*$  from the assumption that  $q^*$ , and, assuming that  $p^*$ , give the right explanation, i.e.  $q^*$ .

Understanding-why is not even a species of knowing-why. Pritchard (2010, 78–9) argues that cases involving environmental epistemic luck illustrate that you can understand why  $p$  even while failing to know why  $p$ . Suppose you come to understand why the global temperature has increased by studying a reliable book. Suppose furthermore that all other books about global warming are very unreliable but superficially just as scholarly so that it is only by chance that you have chosen the reliable one. The involved epistemic luck prevents you from knowing since you could easily have bought an unreliable book; but when one has knowledge one's true belief could not have easily been false. However, it does not undermine your understanding. After all, your belief why the global temperature has increased is correct and you assumedly grasp correctly how increasing concentrations of greenhouse gases cause global warming and hence have the requisite abilities. This would still be the case if your own book were the result of some inventive guesswork and thus very unreliable, but its explanation were, as a matter of luck, correct. Hence, I'm inclined to claim against Pritchard and with Hills (2010, 196, fn. 13) that understanding-why is also compatible with standard Gettier-style epistemic luck.

Kvanvig (2003, 197) suggests that understanding has a different relationship to epistemic luck than knowledge due to a difference in focus. When we think about understanding, we focus on grasping explanatory connections and thus on having certain abilities. When we think about knowledge, we focus on believing a proposition that could not easily have been false and thus on non-accidentality. Hence, having acquired the belief in a lucky way undermines knowledge-why, but having acquired the abilities in a lucky way does not undermine understanding-why.

Besides grasping explanatory connections, understanding-why requires having good reflectively accessible grounds in support of one's explanation. Both requirements are internal to cognition since the facts determining that the understander satisfies them are accessible to him. But understanding-why cannot be construed along purely internalist lines. To understand why  $p$ , one's explanation must answer the facts. Like knowing-why, understanding-why is therefore usually considered factive (Pritchard 2010, 75–6; Hills 2010, 190). The factivity of knowledge follows the truth condition. You know why  $p$  if you know that  $p$  because of  $q$ ; this implies that " $p$  because of  $q$ " is true. Hence, understanding-why seems to be factive iff you cannot understand why  $p$  if you treat  $q$  as the reason or cause why  $p$  but " $p$ " or " $q$ " are false or  $q$  is not why  $p$ . However, scientific explanations often make use of idealizations. Even though the ideal gas law is not strictly true for actual gases, in circumstances where the divergence from the ideal is negligible, the behaviour of actual gases is explained by reference to the idealization (Elgin 2007, 38). We can only acknowledge that such explanations provide some understanding-why when we admit that it is not always factive. Non-factive cases are further cases of understanding why  $p$  without knowing why  $p$ .

Understanding why  $p$  involves a whole set of coherent beliefs constituting one's explanation. Even in simple cases, it involves beside the belief that  $p$  because of  $q$  beliefs about how  $q$  can cause  $p$  and that if  $q^*$  rather than  $q$  were true, then  $p^*$  rather than  $p$  would be true. In complex cases such as explaining global warming, there are several causes that interact in complicated manners. The suggested factivity requirement leaves it open whether all further beliefs must be true for understanding-why in order to be factive. This leads to objectual understanding.

## 2. Objectual understanding

Understanding a subject matter involves more than understanding why some fact about it obtains. Besides understanding why it occurs, understanding global warming involves, for instance, understanding what effects it will have, which relations it has to human activities and how far the temperature is likely to rise in future. As a result, objectual understanding involves grasping more explanatory and other coherence-making relationships in a more comprehensive body of information. Again, the grasping manifests itself in certain abilities (Elgin 2007, 35). Understanding global warming involves being able to comprehend and render explanations for a whole range of facts, draw conclusions from a variety of information and answer “what-if-things-had-been-different?” questions concerning a whole web of explanations; but also to develop emission scenarios, use them to project future concentrations of greenhouse gases, assess uncertainties in climate model projections, and so on.

Objectual understanding is not identical with knowledge since for each type there are cases in which one has knowledge but not objectual understanding. It follows from what has already been said that you can know that and even why a fact about a subject matter *S* obtains without understanding *S*. To know *S* you have to know the important facts about *S* and to know how they are related. Nonetheless, you can even know *S* without understanding *S*, namely when you fail to grasp the relations between the facts and thus do not have the requisite abilities.

Objectual understanding is not even a species of knowledge since for each type there are cases in which one has objectual understanding but not knowledge. If environmental and standard Gettier-style epistemic luck do not undermine your understanding of the causes of global warming, then they do not undermine your understanding of global warming either. But they prevent you also from having objectual knowledge. The reason is that we are inclined to explain knowledge of *S* in terms of knowledge of the facts involved in *S*; at least, we should claim that knowing *S* involves knowing a number of facts constituting *S* (Kvanvig 2003, 197). Hence, if epistemic luck prevents you from knowing that and why some fact about *S* obtains, it prevents you also from knowing *S*. Thinking otherwise would separate the different types of knowledge too much.

Having environmental or standard Gettier-style epistemic luck is very unlikely with respect to theories about such complex phenomena as global warming. Non-factive cases of objectual understanding, however, are quite frequent. Objectual understanding is factive iff most of the propositions and all of the central propositions that constitute the account of the subject matter are true. It is not always factive for two reasons (Elgin 2007, 36–9). Firstly, it can be more or less accurate. Previous and even current scientific theories do not largely consist of truths with a few relatively insignificant falsehoods at the periphery. Hence, we can only acknowledge that science provides some understanding if we admit that even some rather central falsehoods lower the degree of understanding but do not destroy it if they are in the right neighbourhood. Kvanvig (2003, 190) objects that we in such cases use “understanding” in an honorific sense, just as “knowledge” when we speak of “the current state of scientific knowledge”. But if we call such uses “honorific”, epistemology should explain why the achievements in question are worthy of honour (Elgin 2007, 38); and this does not seem to be a purely pragmatic matter.

Secondly, as already mentioned, even mature science is rife with idealizations. They are neither eliminable from scientific theories, nor can they be banished to the periphery of such theories. Hence, we can only acknowledge that science exhibits some understanding if we admit that idealizations do not destroy it (some may not even degrade it). Kvanvig (2009, 342–3) objects that idealizations do not imply non-factivity if we appreciate that the object of understanding is not simply the model itself but involves a relationship between model and

reality. However, environmental scientists do simply not know how climate models diverge from reality; but this does not completely undermine their understanding of global warming.

You may have no understanding of *S* if all your beliefs about *S* are just false. But in non-factive cases, you have some understanding of *S* without knowing all central facts involved in *S* and, indeed, without knowing *S*. Here is an argument why. Objectual understanding is not factive; knowledge-that is factive. If one takes some types of knowledge as factive and others as not factive, this may separate them too much. Hence, objectual knowledge should be taken to be factive. So, there are further cases of objectual understanding without objectual knowledge.

### 3. Characteristics of understanding

As a result of my discussion, understanding-why and objectual understanding are

- (1) *gradual*: besides being more or less accurate, they can at least vary in depth (grasping more or less explanatory and other coherence-making connections) and breadth (in a more or less comprehensive body of information);
- (2) *no species of belief* and *not even fully explicable as collections of beliefs*: they involve a whole set of beliefs, grasping explanatory and other coherence-making connections between their contents and thus owning certain abilities;
- (3) *not always factive* but *answer the facts*: they can involve even central propositions that are not strictly true but in the correct neighbourhood;
- (4) *epistemically internalist states*: besides grasping explanatory and other coherence-making connections, they require entailing good reflectively accessible grounds;
- (5) *compatible with epistemic luck*: they are neither undermined by environmental epistemic luck nor by standard Gettier-style epistemic luck.

These characteristics affect any explication of understanding-why and objectual understanding. The explicandum has to be construed as a gradual one. The definition of the explicatum has to include a grasping condition that corresponds to the belief condition for knowledge-that and should be spelled out in terms of owning certain abilities (Grimm 2006, 530–3), an answering-the-facts condition that corresponds to the truth condition and a justification condition that has to be construed along internalist lines, and may also be spelled out in terms of owning certain abilities; but it does not need a further external anti-luck condition.

### 4. Propositional understanding

Here are two widespread claims involving propositional understanding:

- (6) Understanding-why is a species of propositional understanding (Kvanvig 2003, 189–90): understanding why *p* is equivalent with understanding that *p* because of *q*.
- (7) Propositional understanding is equivalent with propositional knowledge (Elgin 2007, 34); hence, understanding that *p* because of *q* is equivalent with knowing that *p* because of *q*.

If understanding-why is neither equivalent with nor a species of knowing-why, then (6) and (7) cannot be both correct, since together they imply that understanding why *p* is equivalent with knowing that *p* because of *q* and thus with knowing why *p*. Since giving up both (6) and (7) does not seem attractive, two options remain.

Firstly, accepting (6) and giving up (7). Understanding that *p* because of *q* is not equivalent with knowing that *p* because of *q*; it additionally involves grasping *q* as the cause or reason

why p and thus having certain abilities. This proposal could acknowledge that simply understanding that p (rather than that p because of q) is equivalent with knowing that p. It is usually with respect to such examples – “He knows/understands that the train leaves now.” – that claim (7) is made.

Secondly, accepting (7) and giving up (6). Understanding why p is not equivalent with understanding that p because of q; it additionally involves, for instance, understanding how q can cause or be a reason for p and that if q\* rather than q were the case, then p\* rather than p would be the case.

The first option seems more in line with my argument, since it acknowledges that there are intimate connections between the different types of knowledge and between the different types of understanding, and clearly distinguishes knowledge and understanding, at least in its important types.

## Literature

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