Testifying Understanding

Forthcoming in *Episteme*

1. Directness and Indirectness

Let's say that you and I are watching baseball, a sport about which you know only a little but I know a lot. With a runner on third base and two outs, the pitcher intentionally throws four balls in a row, advancing the batter to first base. You are confused: why, you ask, would the pitcher give his opponent a free trip to first base? I explain to you that the batter is an extremely good hitter, and so it is safer to put him on first base and remove the possibility of him driving in a run, especially since there is only one out remaining in the inning, and because the next batter is a relatively poor hitter. As a result of our conversation, you come to know some new things: you have gained, as a result of my testimony, some new knowledge about baseball.

Say now that I not only know, but *understand* a lot about baseball, as well: perhaps I have watched a lot of baseball, maybe even played a little, am familiar with the rules, strategies, and roles of the relevant players, etc. Let us also say, then, that I not only *know* why the pitcher intentionally walked the batter, I also *understand* why he did. Although it seems perfectly natural to say that I have this understanding, it's not terribly clear what this understanding consists in. It seems, however, that the following things about understanding are true. First, it seems that my background familiarity with and knowledge about baseball are required for me to have my understanding: someone who knows almost nothing about baseball would not have the understanding that I do. Second, my understanding seems to consist in more than just a collection of things that I know: understanding why the pitcher intentionally walked the batter

seems to require, to use a common metaphor, that I be able to *grasp* connections between relevant bits of knowledge that I have, say the knowledge I have of the rules of baseball, baseball strategies, and the relative strengths of weaknesses of the players[1]. Finally, it seems that while I understand a lot about baseball, it also seems that in general I understand less than I know, as understanding seems to be harder to get than knowledge.

Now, while it seems that you can acquire various bits of *knowledge* about baseball through my testimony, it seems much less plausible to say that you can acquire *understanding* in the same way. The best, it seems, that you can do is to acquire as much knowledge as possible from me, and on that basis you can potentially come to understand why the pitcher did what he did. But it's still *up to you* to acquire this understanding *for yourself*: *you* have to put together the pieces, a process that perhaps involves other things I've told you, or other knowledge that you have already. Again, understanding seems to require that you grasp some fact or information, or relationships between other facts or other information, and this is not something I can do for you. This is not something that you have to do when acquiring knowledge: while testimony can be a *direct* source of knowledge, it seems that it cannot be a direct source of understanding[2].

Recently, those writing on understanding and testimony have adopted just this view of the relationship between them. Consider, for example, the following from Linda Zagzebski (2008):

[1] Talk of "grasping" is ubiquitous in discussions of understanding. See, for example, Kitcher (1989), Kvanvig (2003), de Regt and Dieks (2005), Grimm (2006; forthcoming), Elgin (2007), Zagzebski (2008), Hills (2009; forthcoming), Khalifa (2013), amongst others. I will look at grasping in much more detail in section 2.5.

[2] The question of whether something is a direct or indirect source of an epistemic relationship is different from a related question in epistemology, namely that concerning whether testimony is a *basic* source of knowledge. Those who argue that testimony is a basic source of knowledge fall into the non-reductionist camp, and include testimony along with sources of knowledge like perception and memory. Those who argue that it is not are reductionists, roughly those who think that the justification we get for our beliefs acquired through testimony is reducible to the justification provided by something else (for an overview of the debates between reductionists and anti-reductionists, see Lackey (2006)). I do not take a stance on the reductionism/non-reductionist debate here (although I do return to it later, briefly). Regardless, both reductionists and non-reductionists would agree that testimony is a *direct* source of knowledge.

> Knowledge can be acquired by testimony, whereas understanding cannot be. A conscientious believer can obtain a true belief on the testimony of another, and given the right conditions, can thereby acquire knowledge...Understanding cannot be transmitted in that way. In fact, understanding cannot be given to another person at all except in the indirect sense that a good teacher can sometimes recreate the conditions that produce understanding in hopes that the student will acquire it also. (145-6)

Allison Hills (2009) argues in the same way:

> If you are attempting to gain knowledge, testimony can serve as the justification for your own belief but it is not usually a good way of acquiring…understanding. Understanding why p will not –cannot – have the same relationship to testimony as knowing why p. (19-20)

Duncan Pritchard (Pritchard, Millar, and Haddock, 2010), although not arguing explicitly for the view that understanding cannot be acquired through testimony, presents a case that exemplifies the worries of Hills and Zagzebski:

> Suppose that I understand why my house burned down, know why it burned down, and also know that it burned down because of faulty wiring. Imagine further that my young son asks me why his house burned down and I tell him. He has no conception of how faulty wiring might cause a fire, so we could hardly imagine that merely knowing this much suffices to afford him understanding of why his house burned down. (81)

Here, then, is what seems to be a plausible view:

> *Indirectness*: Testimony cannot be a direct source of understanding; at best, it can be an indirect source of understanding by laying the groundwork for potential understanding.

Despite its prima facie plausibility, I'm going to argue that *Indirectness* is, in general, false: there is reason to think that at least some kinds of understanding (and not just the *grounds* for understanding) can be acquired directly through testimony.

An obstacle that impedes a thorough investigation of the relationship between understanding and testimony is that there is no consensus about what constitutes the epistemic relationship of understanding. Nevertheless, I will argue that no matter how understanding is construed, there are two general types of understanding that can be acquired through testimony: *easy understanding* and *easy$_s$ understanding*. *Easy understanding* is that which is concerned with basic facts or concepts and can be acquired without requiring any specialized background knowledge or cognitive abilities[3]; while *easy$_s$ understanding* is understanding that is easy *for a particular subject S*, given their background familiarity with the relevant subject matter, knowledge, skills, and abilities (for example, something might be easy$_s$ for an expert that would not be easy for a layperson). I argue that if these kinds of understanding can be acquired through testimony, then the reason why *Indirectness* seems to be true is that understanding is often presented as something that is *difficult*, and things that are difficult to understand require substantial work on the part of the person doing the understanding. I conclude by considering the implications of my arguments on views of understanding that portray it as a significant cognitive achievement and, by extension, a uniquely valuable epistemic concept.

To discuss the relationship between understanding and testimony we need to discuss both understanding and testimony. Here I will be concerned almost exclusively with the former. In terms of the latter, I will assume for the sake of discussion that in order for a subject to acquire

[3] Zagzebski (2008) mentions in passing that there may very well be kinds of "easy understanding": her example is of "understanding a stop sign in the United States" (144). However, we differ insomuch as Zagzebski does not think that even easy understanding can be transmitted through testimony.

an epistemic relationship with a proposition or propositions via testimony requires that the speaker possess that epistemic relationship with the relevant proposition(s), that the hearer conceives of the speaker in some way as trustworthy (either by having positive reasons to believe that the speaker is trustworthy, or by lacking any reasons to doubt that she is), and that the hearer also possesses the necessary background concepts or beliefs to properly interpret what the speaker is saying. The purpose of this bare-bones conception of testimony is merely to show that a conception of testimony that permits the acquisition of knowledge is also one that permits the acquisition of understanding[4].

Philosophical work on the epistemic relationship of understanding is relatively nascent; as a result, there are some fundamental aspects of understanding that are a matter of significant debate. I will consider five such aspects here: understanding's *relationship to knowledge*; whether understanding is *factive*; the extent to which understanding is susceptible to *epistemic luck*; understanding's *paradigmatic form*; and understanding's requirement of a *grasping* relation. I will consider each aspect in turn as it relates to the possibility of acquiring understanding through testimony. In other words, for each of these aspects of understanding, the relevant question becomes: does this aspect, in general, stand in the way of being able to acquire understanding directly through testimony? I will argue that for each of these questions the answer is "no".

2. Five Open Questions about Understanding

[4] Jennifer Lackey (2008) has argued (in my mind, convincingly) that the metaphor of "transmitting" knowledge leads to faulty conceptions of testimony: on Lackey's conception, knowledge acquired through testimony comes from the words themselves, not the epistemic relationship possessed by the speaker of those words. To leave room for this view, I discuss the process of "acquiring through testimony" rather than "transmitting through testimony." Lackey's view is too nuanced to address in detail here; nevertheless, if Lackey is correct, then I see no reason to think that we cannot gain understanding through words, as well.

2.1 Is Understanding a Kind of Knowledge?

The first major question concerns understanding's relationship to knowledge – specifically, whether understanding is a *species* of knowledge. On one view, to understand something is just to know more about it: one might have to know the reasons why it's true, or know how it relates to other aspects of the relevant domain, etc. (see, for example, Lipton (2004), Grimm (2006), and Kelp (forthcoming)[5]). For example, considering the baseball case again, understanding why the pitcher intentionally walked the batter might consist in knowing all of the following: that 'the batter is a very good hitter', that 'throwing four balls on purpose is an intentional walk' as well, perhaps, as the relationship between this and other knowledge, say 'the pitcher threw four balls intentionally because the batter is a very good hitter'. Here, then, is a very simple argument for the possibility of acquiring understanding through testimony: if understanding is a species of knowledge, and knowledge can be acquired through testimony, then at least some understanding can be acquired through testimony.

There are ways in which this argument could be invalid. We might think, for instance, that while *some* knowledge can be acquired through testimony, not *all* of it can: for example, some have argued that *moral* knowledge cannot be acquired through testimony (see Hopkins (2007))[6]. Understanding, then, might simply turn out to be a kind of knowledge that cannot be acquired through testimony. If this happens to be the case, then it must be because of some aspect of understanding that distinguishes it from other kinds of knowledge that can be so acquired. Answering the question of whether understanding is a kind of knowledge, then, will not by itself shed any light on the question of whether understanding can be acquired through

[5] I will return to these views in more detail in what follows.
[6] Hills (2009), however, argues that the view that moral knowledge cannot be transmitted through testimony either reduces to skepticism about the existence of moral knowledge or an implausible view about testimony. I will not take a stance on this debate here.

testimony, as we would still need to figure out what aspect of understanding stands in the way of being able to acquire it in this way. We need to look at other aspects of understanding instead[7].

2.2 Is Understanding Factive?

Knowledge is factive. Some, however, have argued the understanding is not. Linda Zagzebski (2008) is perhaps the most prominent proponent of this characterization of understanding: she argues that while understanding requires grasping the relevant connections between various pieces of information, as well as the exercising of certain kinds of skills, neither of these requirements entail truth. Catherine Elgin (2009) also expresses reservations about understanding's factivity, since understanding is not clearly propositional (an issue I will return to below). By itself, a difference in factivity would be enough to distinguish understanding from knowledge as a unique epistemic relationship. The factivity of an epistemic relationship, however, does not seem, by itself, to be capable of preventing that relationship from being acquired through testimony. For example, knowledge is factive and can be acquired through testimony, whereas belief is not factive but can also be acquired through testimony. So the question of factivity is not of primary importance with regard to the question at hand.

2.3 Is Understanding Susceptible to Luck?

It is widely accepted that knowledge is incompatible with at least some kind of *luck*. Two kinds of luck that have been proposed as incompatible with knowledge are *Gettier-style luck* and *environmental luck*. The former is exemplified by Edmund Gettier's (1963): in general, Gettier-style luck occurs when one has a true belief, but one's belief is not true because of the facts that

[7] I do not take the open questions I address here to be necessarily *exhaustive* of relevant questions pertaining to the nature of understanding. Rather, I consider those aspects of understanding that are most frequently discussed by those writing on the topic, as well as the aspects that seem most likely to stand in the way of acquiring understanding through testimony.

make it true. Environmental luck, on the other hand, typically involves cases in which one's belief is true, and is true because of the facts that make it true, but in which the belief could have easily turned out to be false[8]. These are merely rough specifications; regardless, while knowledge is typically taken to be incompatible with both Gettier-style luck and environmental luck, various authors have argued that one can have understanding even if one acquired it in one or both of these lucky ways. For example, Kvanvig (2003) and Morris (2012) argue that understanding is compatible *both* with Gettier-style and environmental luck (that is to say, one could have understanding of some information even if one's understanding is true but not because of the reasons that make it true, and even if that information could have easily turned out to be false), whereas Grimm (2006) and Pritchard (Pritchard, Millar, and Haddock, 2010) argue that understanding is incompatible with Gettier-style luck, but compatible with environmental luck.

As is the case with factivity, susceptibility to either Gettier-style or environmental luck does not seem, on its own, to be able to determine whether one can acquire understanding via testimony. If anything, it seems that the less susceptible a relationship is to being undermined by luck, the easier it becomes for one to acquire it. If knowledge is incompatible with both Gettier-style and environmental luck, and knowledge can be acquired through testimony, then it is hard to see how an epistemic relationship being susceptible to only one or neither of these kinds of luck could prevent it from being acquired through testimony.

While differences between understanding and knowledge in terms of factivity or luck can be dismissed quickly, the other potential differences require significantly more care.

[8] The paradigmatic environmental luck case is the *barn façade case*: in a case in which one sees a barn, forms the true belief that 'there is a barn', but, unbeknownst to the belief-former, is looking at the only genuine barn amongst a sea of barn façades, is one in which the subject does not possess knowledge (see: Goldman (1976)).

2.4 What is the Object of Understanding?

Traditionally, when epistemologists talk about knowledge they talk about *propositional knowledge* – or "knowledge-that" – and the paradigmatic form of a knowledge attribution has been taken to be of the form "S knows that *p*"[9]. There is much less consensus when it comes to the object and paradigmatic form of understanding. The three most popular candidates are illustrated in the following examples:

> *Understanding-why*: With a runner on third base and two outs, a very good hitter comes to the plate. As a spectator in the stands (and long-time baseball fan), you see that the pitcher, not wanting to risk giving up a run, intentionally throws four balls in a row to give the batter a free trip to first base. Given your background familiarity with and knowledge of baseball, in seems natural to say that "You *understand-why* the pitcher intentionally walked the batter".

> U*nderstanding-how*: With a runner on third base and two outs, a very good hitter comes to the plate. As the pitcher, you don't want to give up another run, so you figure it's safer to give the batter a free trip to first base than to give him the opportunity to drive in a run. In your experience, the best way to do this is to signal to the catcher, and then throw four

[9] This is not the only kind of knowledge attribution we can make: for instance, we often make knowledge attributions that someone *knows how* to do something, or that one *knows-wh* something, i.e. that one knows where something is, when something is, what something is, or who someone is. It has been argued that knowledge-wh is propositional (for an overview of this debate, see Brogaard (2009)), and it is a matter of significant debate whether knowledge-how and knowledge-that are reducible to one another or are distinct (see, for instance, Stanley and Williamson (2001)). I will discuss these issues briefly in what follows, but I won't take a stand on any of the debates.

pitches well outside of the strike zone, making sure that the batter has no chance of hitting them. Given your background familiarity with and knowledge of baseball, it seems natural to say that "You *understand-how* to pitch strategically".

Understanding-□ (where "□" is some object, concept, or phenomenon): With a runner on third base and two outs, a very good hitter comes to the plate. As the coach of the team on defense, you can see that the next batter is a relatively poor hitter, so you signal to the pitcher that he should intentionally walk the batter. Given your background familiarity with and knowledge of baseball, it seems natural to say that "You *understand-*□ baseball" (or, perhaps more naturally still, that "You *understand baseball*")[10].

Various authors writing on understanding have taken different forms of understanding to be paradigmatic: for example, Pritchard (Pritchard, Millar, and Haddock, 2010) and Hills (forthcoming) take *understanding-why* to be the paradigmatic form of understanding; Zagzebski (2008) takes *understanding-how* to be paradigmatic; and Kvanvig (2003), Wilkenfeld (2013), and Kelp (forthcoming) take *understanding-*□ to be paradigmatic. While all of these forms of understanding seem natural in the relevant context, it is up for debate whether one of these forms is *truly* paradigmatic, whether some forms are derivative of or reducible to others, or whether "understanding" is polysemous. Without taking a stance on which, if any, of these forms is truly

[10] The kinds of things that could be included in the place of the "□" are multitudinous and disparate. Kvanvig (2003), for instance, gives the examples of "understanding quantum mechanics" and "understanding my partner" (we will also see many more instances of understanding-□ in what follows). The important aspect of the understanding-□ form is that understanding is supposed to be a relationship that one has towards a thing, or one's representation of a thing, concept, or phenomenon. I address this in more detail below. However, it is an open question as to whether the kinds of things that can take the place of the □ can all be spoken of in a unified way: Grimm (forthcoming), for example, argues that there is reason to think that there are differences between understanding people and understanding scientific theories. I will not engage with this debate here.

paradigmatic, the question becomes whether any of these forms would entail that the relevant form of understanding cannot be acquired through testimony.

It seems plausible that they might. Here's the problem. Testimony, as it is typically conceived, is concerned with *propositions*: testimony is conveyed through uttered sentences that express propositions, so it might be thought that whatever I acquire via testimony must itself be something that is propositional. Knowledge-that fits the bill: if you know that *p*, tell me that *p*, and the right background conditions are in place, I can come to know that *p* as a result of your testimony. Is understanding concerned with propositions? It's not clear. Understanding certainly has to be *about something*, be it some bits of information or subject matter, and whatever one's understanding happens to be about could potentially be either a set of propositions or something expressible in terms of propositions. There is, of course, the requirement that one also grasp the relevant connections between pieces of information or the subject matter as a whole in order to have the relevant understanding. Thus there seem to be two main components of an instance of understanding: an *informational* component and a *grasping* component. While the grasping component is the focus on the next section, in this section I will argue for the following: regardless of what the paradigmatic form of understanding happens to be, the informational component of an instance of understanding is something that can be acquired through testimony. If there is something that stands in the way of understanding being acquirable through testimony, then, it is not a consequence of its paradigmatic form.

Consider first the case of understanding-why: Pritchard (Pritchard, Millar, and Haddock, 2010) states that "knowledge…is concerned with propositions, whereas understanding usually isn't, at least not directly anyway" (74). Pritchard is saying that while knowledge is paradigmatically taken to be concerned directly with propositions in the form of knowledge-that

attributions, "it is rare to talk of understanding that *p*" (74). These considerations by themselves, however, do not necessarily speak against the propositionality of the informational content of understanding-why: Pritchard's paradigmatic form of an understanding attribution is of the form "understanding-why X is the case", and it's plausible that to understand-why X is the case one's understanding is directed towards a set of propositions, namely those reasons as to why X is the case. For example, my understanding-why the pitcher intentionally walked the batter might have as its object a set of propositions including 'there are two outs', 'the batter is a very good hitter', 'the next batter is a weak hitter', etc., along with relations between them, perhaps 'the pitcher threw four balls in a row because there are two outs…'. Indeed, without having some kind of relationship with these propositions it is difficult to see how anyone could be said to understand why the pitcher intentionally walked the batter.

Of course, all of this is in line with *Indirectness*: if one holds the view that all testimony can do is to provide the *basis* of understanding, then one would presumably be happy with saying that the relevant information one has understanding of can be acquired through testimony. What's important for the *Indirectness* proponent is that there is an aspect of understanding that cannot be acquired via testimony. I examine this argument in detail in section 3; for now, however, it is enough to note that if understanding-why is the paradigmatic form of understanding, then the fact that the object of understanding is something of the form "X being the case" does not stand in the way of understanding being acquirable directly through testimony.

What about the other forms? Is the object of *understanding-how* propositional? It's not clear. Consider an analogous question, that of the object of *knowledge*-how: some have argued that knowledge-how is propositional because it is simply a kind of knowledge-that (Stanley and

Williamson (2001), for instance, argue that knowledge-how is just knowledge-that conceived of under a "practical mode of presentation"), whereas others have argued that while knowledge-how is not necessarily reducible to knowledge-that, it is nevertheless still propositional (Hawley (2010), for example, considers this possibility). If the same could be said for understanding-how – i.e. that understanding-how is either reducible to a form of propositional understanding or is still expressible in some propositional way – then again there does not seem to be a barrier, in terms of its propositionality, to it being acquirable through testimony. However, there is also a sense in which knowledge-how is concerned with a *skill* or an *ability*; analogously, Zagzebski, who seems to take understanding-how to be the paradigmatic form of understanding, argues that understanding often involves the mastery of a skill or *technê* (2008: 144). Skills, abilities, and techni, however, might not be the kinds of things that are propositional or reducible to something that is. If this is the case, then understanding-how might not be able to be acquired through testimony because it is non-propositional.

It does not seem likely that one can gain a mastery of a skill that one was previously unfamiliar with through a single testimonial act, and in *this* sense it seems true that one cannot acquire understanding directly through testimony. However, even if this understanding necessarily involves the possession of a skill or ability, there is still reason to think that one can acquire new understanding-how by acquiring new information, since once one already possesses a set of skills within a relevant domain one can come to understand how to do new things within that domain by applying one's skills to new information. For example, the baseball pitcher who understands how to throw a curveball can come to understand how to throw a slider by applying his baseball skills to new information; the boxer who understands how to beat a right-handed opponent can come to understand how to beat a southpaw by applying her boxing skills to new

information; the math student who understands how to factor a binomial can come to understand how to factor a trinomial by applying their mathematics skills to new information; etc. I will return to this idea below in sections 3 and 4; for the time being, the important point is that even if the paradigmatic form of understanding is understanding-how, since understanding-how can plausibly be acquired by applying already-possessed skills to new information (one does not always have to develop new skills when gaining new understanding-how), there is nothing about the *object* of understanding-how that stands in the way of it being acquirable through testimony[11].

The last form of understanding is also the one that seems to be the most clear-cut in terms of propositionality: the case of understanding-□. Above, I gave the example of understanding baseball, where the object of understanding was the game of baseball itself. The game of baseball, however, is straightforwardly not a proposition, and thus it seems equally straightforward that an understanding of baseball cannot be acquired through testimony. We could, however, approach understanding-□ in the same way that we approached the other forms of understanding, namely to consider whether understanding-□ is either expressible in terms of propositions or is reducible to a kind of propositional understanding: for example, understanding baseball might just consist in a collection of instances of understanding-why or understanding-how (e.g. I understand how to win games, I understand why my opponents do what they do in certain situations, etc.); alternatively, when baseball is the object of my understanding, I might consider the game as represented by a set of rules and strategies, which is something that, presumably, can be expressed propositionally.

[11] Again, this is all still in line with the *Indirectness* supporter: said supporter might agree with everything said up until this point, because acquiring understanding still involves active cognitive work involved in grasping the information one has received. I will address this in section 3. For now, the point is simply that if understanding-how, in virtue of its object, does not stand in the way of acquiring it through testimony.

Several authors who take understanding-□ to be paradigmatic explicitly argue that understanding-□ is propositional, or can be expressed in terms of something propositional. Wilkenfeld (2013), for example, argues that the correct form of an attribution of understanding is "understanding x", where potential candidates for x include such disparate objects as formal theories, proofs, artistic objects, narratives, historically situated events, artifacts, individual people, games, physical theories, actions, the meaning of a word, and a language (998). Nevertheless, Wilkenfeld argues that understanding is a "mental phenomenon", since the proper object of understanding is not the items themselves in the aforementioned list, but rather one's representation of those items. Since mental representations are at least sometimes propositional, then Wilkenfeld's version of understanding-□ is one way of conceiving understanding-□ as propositional[12].

Similarly, Kelp (forthcoming) presents a version of understanding-□ in which the object of understanding is a *phenomenon*. Again, the list of possible phenomena are diverse: persons, objects, events, processes, and instantiations of properties and relations all make the list (10). Regardless, Kelp maintains that "for every phenomenon, no matter its metaphysical nature, there is a set of true propositions that describe it" as well as "a set of true propositions describing its place in a broader nexus of phenomena," where the former set of propositions constitutes a phenomenon's *description*, and the latter set constitutes its *story* (11). For Kelp, understanding a phenomenon is expressed in terms of its "full account", which is the union of its description and

[12] One might object that not *all* mental representations are propositional, and thus even if the object of understanding-□ is a mental representation of a phenomenon, this does not in itself establish that understanding-□ is propositional. Wilkenfeld, however, clearly thinks that at least some cases of understanding-□ are propositional, as he argues that propositions or sets of propositions themselves can be included in the list of things that are the potential object of understanding-□ (2013: 1000).

story. Again, without evaluating the specific merits of Kelp's account, we can see that it provides another propositional conception of understanding-□.

Nevertheless, one might worry that there are certain objects or phenomena that cannot, for whatever reason, be plausibly expressed in terms of a set of propositions, perhaps because the objects are particularly complex. As we will see below, I leave open the possibility that understanding a very complex object or phenomenon can be very difficult, and that difficult understanding, in any of its forms, might not be able to be acquired through testimony. But understanding-□ need not involve particularly complex objects, and might not be particularly difficult to obtain. We can understand-□ simple objects, things, or phenomena, and, as was the case with the other forms of understanding, while understanding-□ does not seem to be concerned with *individual* propositions, there are still individual, discrete instances of understanding-□. For example, the baseball coach can understand player management, the batting coach can understand batting, and the pitching coach can understand pitching, with none of them understanding baseball in its entirety; one physics students can understand the Schrodinger's cat thought experiment, another can understand wave functions, and another can understand wave-particle duality, with none of them understanding quantum mechanics in its entirety; etc. As was the case with understanding-how, while it seems that an understanding of the *entirety* of baseball cannot be acquired through a single testimonial exchange, with the right kind of background knowledge and abilities in place one could potentially acquire new instances of understanding-□ by applying one's background knowledge and abilities to new pieces of information.

Kvanvig (2003), for instance, argues that understanding-□ is concerned with "the ways in which pieces of information are connected with each other" (3). Since one can gain new

information through testimony, then it seems that one could at least gain the requisite material for new understanding-□ through a testimonial exchange, even if the □ that one is understanding is not a proposition or set of propositions. Other conceptions of understanding-□ also seem to permit the acquisition of new understanding by acquiring new information: gaining new information could result in the acquisition or modification of a mental representation if we adopt Wilkenfeld's model, and could create a story or description, or modify an existing story or description of a phenomenon if we adopt Kelp's model. That an instance of understanding-□ should have an informational component, then, means that if there is anything standing in the way of being able to acquire understanding-□ through testimony it is not a consequence of the paradigmatic form of understanding.

I have argued in this section that regardless of what the paradigmatic form of understanding happens to be, there is no barrier to acquiring the informational component of an instance of understanding through testimony. However, I have also argued that it is far less clear whether one can gain the relevant skills or abilities required for understanding in the same way, or whether the fact that one can acquire *information* directly through testimony means that one can also acquire *understanding* directly through testimony. We have also seen that the relevant skills or abilities are often spelled out in terms of a kind of "grasping" between bits of information. The grasping aspect of understanding seems to be the most significant obstacle to acquiring understanding directly through testimony: while I could, presumably, acquire all of the groundwork for understanding in the form of the relevant pieces of knowledge from testimony, the grasping component of understanding is not, seemingly, something that I can acquire through testimony. I turn to this problem next.

2.5 What is the Nature of Grasping?

The final major open question about understanding concerns the nature of its requirement that to understand one must "grasp" some information or the relationship between some information. When grasping is referred to, however, it is typically done so metaphorically, with little attention having been paid to analyzing it in any detail. Consider, for example, the following sampling of some discussions of grasping:

> Understanding involves an already-possessed awareness of the explanatory and other connections involved in the subject-matter in question, an already-mastered grasp that involves or generates the illumination of a subject we resort to the language of intelligibility and sense-making to convey…the features that constitute the nature of understanding are factivity plus the grasping of internal, structural relationships between pieces of information. (Kvanvig, 2003: 6)

> [Understanding] involves grasping relations of parts to other parts and perhaps the relation of parts to a whole…Unlike beliefs, understanding is not passed along from testifier to a recipient. The person's own mind has to do the "work" of understanding. (Zagzebski, 2008: 144-5)

> [Y]ou cannot understand why p unless p is true and you have the appropriate grasp of the reasons why p…The grasp of the reasons why p that is essential to understanding involves a number of abilities: to understand why p, you need to be able to *treat* q as the reason why p, not merely *believe* or *know that* q is the reason why p. (Hills, 2009: 6)

> [To mentally] grasp how the different aspects of a system depend upon one another is to be able to anticipate how changes in one part of the system will lead (or fail to lead) to changes in another part…"Grasping" a structure would therefore seem to bring into play something like a modal sense or ability – that is, an ability not just to register how things are, but also an ability to anticipate how certain elements of the system would behave, were other elements different in one way or another. (Grimm, 2006: 11-12)

While the above conceptions of grasping are predominantly metaphorical, some have recently proposed more systematic conceptions. For example, Kareem Khalifa (2013) argues that:

> [G]rasping involves reliable explanatory evaluation…Explanatory evaluators' inputs are various potential explanations of a phenomenon plus a body of relevant evidence, and their outputs are beliefs about which of these potential explanations is an actual explanation of this phenomenon…Explanatory evaluators are reliable just in case the resulting beliefs could not easily have been false. (6)

Hills (forthcoming) also provides a detailed conception of grasping:

> When you grasp a relationship between two propositions, you have that relationship under your control. You can manipulate it. You have a set of abilities or know-how relevant to it, which you can exercise if you choose. For instance, if you understand why p, you can give an explanation of why p and you can do the same in similar cases. If you find out that q (where q is why p), you can draw the conclusion that p (or that probably p, if q only makes p probable). And you can do the same in similar cases. (3)

Hills goes on to list six "cognitive control" abilities involved with "understanding why p (and q is why p)", such that one can:

(i) follow some explanation of why p given by someone else.

(ii) explain why p in your own words.

(iii) draw the conclusion that p (or that probably p) from the information that q.

(iv) draw the conclusion that p' (or that probably p') from the information that q' (where p' and q' are similar to but not identical to p and q).

(v) given the information that p, give the right explanation, q.

(vi) given the information that p', give the right explanation, q'. (3)

Although each of these engagements with grasping is different, it seems that we can draw some general lessons from them: specifically, grasping seems to involve the exercise of some kind of cognitive ability or abilities, where instances of grasping involve the relationships between the thing understood and either the reasons that make that thing true or propositions that are related to it.

Other authors discuss certain abilities that must be present in order to have understanding without discussing these abilities in terms of "grasping". Wilkenfeld (2013), for example, argues that understanding requires "an ability to manipulate some mental correlate of the understood object such that, in the absence of interfering factors, one would then be able to manipulate the target itself" (1003), while de Regt and Dieks (2005) posit as a criterion of understanding that one be able to "recognize qualitatively characteristic consequences of [theory] T without performing exact calculations" (151). It is not clear whether all of these abilities are necessarily *cognitive* abilities: one might have a conception of grasping, or of the abilities required for understanding generally, that one be able to *do* something practical (as is perhaps the case in

instance of understanding-how), or that one have an ability that is domain-specific (for example, in the case of scientific understanding, one might have to be able to do specifically *scientific things*, such as making some information visualizable, or to be able to model it effectively, etc.; see, for instance, de Regt and Dieks (2005) and Lenhard (2009)). Although these conceptions of the skills and abilities required for understanding are different, they will ultimately create the same problems for the view that understanding can be acquired through testimony, namely that while understanding requires the exercise of some kind of ability, exercising that ability prevents one from being able to acquire understanding directly through testimony. In what follows, then, I will address this concern in terms of grasping.

That understanding requires a kind of grasping has a number of consequences concerning the ability to acquire it through testimony. One consequence of the grasping requirement seems to be gaining understanding is something that has to be primarily attributable to the subject, since grasping is something that the subject has to do for themselves. When it comes to gaining knowledge, by contrast, it seems that the knowledge that one gains can be primarily attributed to someone other than the subject. Consider the following case:

> *Jenny the Tourist*: Jenny arrives at the train station in Chicago and, wishing to obtain directions to the Sears Tower, approaches the first adult passer-by that she sees. Suppose further that the person that she asks has first-hand knowledge of the area and gives her the directions that she requires. Intuitively, any true belief that Jenny forms on this basis would ordinarily be counted as knowledge. (Pritchard, Millar, and Haddock, 2010: 40; attributed to Lackey 2007)

There are interesting lessons to be drawn from the *Jenny* case: Lackey (2007) argues that it shows that one can have knowledge that is not at all creditable to the knower, while Pritchard

(Pritchard, Millar, and Haddock, 2010) weakens the claim by arguing that the case shows that one can have knowledge that is not *primarily* creditable to the knower. Regardless, by acquiring knowledge in this way one is more of a passive receptacle than an active participant: the majority of the cognitive work that was required in coming to know where the Sears Tower is located was done primarily by the testifier, and they are merely bestowing their knowledge to Jenny.

It might be difficult to see how one could acquire understanding in the way that Jenny acquires her knowledge. Returning to the example with which we started, while it seems that you can gain a lot of knowledge about baseball through my testimony, what you cannot gain through my testimony is a grasp of the relevant connections between the bits of knowledge that you have gained. Again, while I can help you lay the groundwork, the fact that understanding is something that has to be primarily attributable to you means that I cannot be entirely or primarily credited for your understanding. This would imply, then, that there is at least one major component of understanding that cannot be acquired through testimony.

However, I will argue that even though one cannot transmit or acquire a "grasping" via testimony, there are kinds of understanding for which the mechanisms that are required for grasping are ones that are activated simply by processing information conveyed through testimony. Just as knowledge can be successfully acquired through testimony if the hearer possesses concepts and background information that are required to process the relevant information in the right way, so too can understanding be successfully acquired through testimony if the hearer possesses the concepts and background information that are required to grasp the relevant information in the right way.

3. Easy and Easy$_S$ Understanding

Some things are difficult to understand – how the large hadron collider works, the behavioral patterns of cuttlefish, the game of cricket, etc. – while other things are easy to understand – how a pencil works, the behavioral patterns of a housecat, the game of tic-tac-toe, etc. Consider the following sketch of a difference between these kinds of understanding: *difficult understanding* requires extensive cognitive effort, potentially over the course of long periods of time, and the implementation of a wide range of cognitive skills and abilities and application of background beliefs and knowledge; *easy understanding* does not require nearly as much, if any, cognitive effort, nor does it require the possession of any unique or well-developed cognitive skills or abilities or any specialized background beliefs or knowledge. There may be more or fewer characteristics of these kinds of understanding, and the distinction certainly does not represent a strict dichotomy. Nevertheless, the point is that some things are simply easier to understand than others.

This distinction between easy and difficult understanding is one that exists regardless of what we take understanding's paradigmatic form to be. Consider the following examples:

> *Understanding-why* Russell's paradox is a reason to reject naïve set theory is difficult; *understanding-why* you left the house early this morning to teach your set theory class is easy (there is construction and you wanted to beat the traffic).

> *Understanding-how* to program a videogame is difficult; *understanding-how* to play the videogame Pong is easy ("move the paddle to hit the square: got it").

Understanding-□ the Schrodinger's cat thought experiment is difficult; understanding-□ my cat is easy (she is motivated by cat food and sleep).

In all of the above cases we can assume a layperson's familiarity with the relevant subject matters; thus understanding-why Russell's paradox is a reason to reject naïve set theory is difficult for the layperson who is not familiar, or only has limited familiarity, with logic or set theory, whereas understanding-why you left the house early this morning is easy for the layperson who has only the most basic of relevant background information, etc.

Discussions of understanding often focus just on those kinds of understanding that are difficult; after all, these seem to be the most interesting and – a point I will return to below – *valuable* cases of understanding[13]. Furthermore, difficult understanding does, in fact, require significant cognitive effort in the form of conscientious grasping. That these factors should stand in the way seems to be just what is going on in the above cases of difficult understanding: to understand-why Russell's paradox is a reason to reject naïve set theory seems to require more, say, than just my giving you a proof of Russell's paradox, since you also have to grasp how the parts of the proof relate to one another and to the debate as a whole; understanding-how to program a videogame requires significant study, practice, and the development of cognitive skills and abilities; and understanding-□ the Schrodinger's cat thought experiment almost certainly requires more than just reading the relevant chapter from a quantum mechanics textbook.

What about cases of *easy understanding*? Acquiring any of the instances of easy understanding in the above examples does not seem to require significant cognitive effort or the

[13] Consider, for example, one of Kvanvig's examples of understanding: "a historical understanding of the Comanche dominance of the southern plains of North America from the late seventeenth until the late nineteenth century" (2003: 197), or Pritchard's examples of "combustion or quantum mechanics or Republican ideology" (in Pritchard, Millar, Haddock (2010:104)), or any of the examples of objects or phenomena listed in the previous section.

development of any specific kinds of skills or abilities, cognitive or otherwise: these are instances of understanding that can be acquired by anyone with only the most basic of background familiarity with the relevant subject matter. Of course, there needs to be *some* familiarity with the relevant background information: if you have absolutely no familiarity with even the most rudimentary of videogames, for example, you might not be able to understand-how to play Pong without gaining some additional knowledge first. But this should not be surprising: any successful testimonial act will require at least *some* background familiarity with the relevant subject matter. Consider again the traditional picture of how knowledge is acquired through testimony. First, I know that *p* and I tell you that *p*. You can then come to know that *p* on the basis of my telling you, but there are certain conditions that need to be in place in order for you to gain that knowledge: I need to have knowledge (say[14]), you need to trust that I know what I'm talking about (at least implicitly, and either for positive reasons or lack of negative ones), and you have to have some background beliefs or concepts that allow you to properly interpret the content of what I am saying (otherwise you could at best parrot what I was saying, but you would not know it). But acquiring knowledge from me does not necessarily involve any significant cognitive effort or the implementation of any specialized skills or abilities: you do not, say, need to explicitly go through the process of reasoning that concludes, from the basis of my trustworthiness, combined with facts surrounding *p*, etc., that you should accept *p*, and only *thereby* come to know it, nor do you need to be able to manipulate the information that *p* in any particular way, or anticipate consequences regarding closely related propositions, etc.

The acquisition of knowledge, then, can be primarily a passive affair. However, there still has to be *something* going on in the mind of the recipient of testimonial information in order to

[14] I am assuming here, for argument's sake, something like the traditional "transmitting" model of testimony; nothing substantial hangs on this assumption.

gain knowledge, this is just not something that is necessarily particularly cognitively effortful, or the result of any specialized abilities, or that involves the application of any particular background information or knowledge, etc. Acquiring beliefs or knowledge does requires that we *process* the information: we have to make sense of the content of one's testimony, and we have to conceive of the testifier or the content of her testimony it in the right way, but that is all. Now, what this "right way" consists in is a matter of significant debate. As we have seen briefly above, two main views about testimony as a source of knowledge state that we either need to possess positive reasons to believe an individual, either in a given circumstance or as a source of testimony more generally, or that one lacks reason to disbelieve or doubt the source of the information or the veracity of the information itself[15]. Different views require more work on behalf of the hearer than others. Consider, for example, the following views. Robert Audi (1997), argues that:

> [B]eliefs about the credibility of the attester and beliefs pertinent to the attested proposition play a mainly filtering role: they prevent our believing testimony that does not "pass," for instance because it seems insincere; but if no such difficulty strikes us, we "just believe" (non-inferentially) what is attested. These filtering beliefs are like a trap door that shuts only if triggered; its normal position is open, but it stays in readiness to block what should not enter. The open position is a kind of trust. (406)

Elizabeth Fricker's (1994) view requires perhaps slightly more work on behalf of the hearer:

> [T]he hearer should be discriminating in her attitude to the speaker, in that she should be continually evaluating him for trustworthiness throughout their exchange, in the light of the evidence, or cues, available to her. This will be partly a matter of her being disposed

[15] These views correspond to the *local* and *global* versions of reductionism, and non-reductionism, respective. See, for discussion and critique, Lackey (2008: chapter 5).

> to deploy background knowledge which is relevant, partly a matter of her monitoring the speaker for any tell-tale signs revealing likely untrustworthiness. (150)

Goldberg and Henderson (2006) argue for a similar requirement, that one "monitor" the quality of incoming information: they compare the kind of monitoring they have in mind to a "buzzer system designed to exploit testimonial regularities" (610). Finally, Lackey (2008) argues that, generally, "the hearer must also do her part in a testimonial exchange by having at least some epistemically relevant positive reasons for accepting the report in question" (175).

Different conceptions of testimony, then, require the hearer to do different amounts of cognitive work in order to acquire knowledge. Regardless of the amount of work one needs to do, however, one is still able to acquire knowledge *directly* through testimony: testimony does not merely lay the groundwork for the acquisition of knowledge, one acquires knowledge via testimony. The case appears to be very different in discussions of the acquisition of understanding: as we have seen above in the various passages regarding grasping, understanding requires active cognitive work on behalf of understander, and the exercise of specific cognitive abilities. The standard view concerning the acquisition of understanding, then, is that understanding requires much more than processing information (as we have seen, it is the extra cognitive work that is taken to stand in the way of understanding being acquired through testimony). The purpose of introducing the idea of easy understanding is to challenge the standard view, by showing that there are instances in which we can set up the conditions for gaining easy understanding in the same way as we can gain knowledge: if I have understanding, you possess the relevant background beliefs and abilities that allow you to properly interpret what I'm saying, and you conceive of me or the content of my testimony in the right way, then when the content of what I'm testifying is easy to understand, you plausibly do not need to do

any more cognitive work to gain understanding than is required to gain knowledge. Since processing does not stand in the way of acquiring beliefs or knowledge directly through testimony, nor should it stand in the way of acquiring understanding directly through testimony.

The idea, then, is the following: in cases of *easy understanding*, all of the mechanisms that are needed to *grasp* the relevant information, or connections between the relevant bits of information, are already activated when *processing* the relevant information. By possessing the relevant background information and concepts, then by successfully processing my testimony that, e.g. "to play Pong, move the paddle to hit the square," you have thereby done enough to grasp the relevant information or connections between bits of information, namely those connections between the information that I am conveying to you through testimony and the background information that you already possess. Even though an instance of understanding involves both an informational component and a grasping component, then, one can "slot in" new information into an already-possessed web of grasped relationships between different pieces of information. Thus while one still needs to fulfil the grasping requirement to gain new understanding, that grasping is not something that can be acquired through testimony does not prevent one from being able to acquire new understanding through testimony, since one can gain new understanding by slotting in new information to already-grasped relationships between information[16].

[16] The same can be said for those conceptions of understanding that require that one possess certain practical or domain-specific abilities: when acquiring new scientific understanding, for example, one does not have to develop new skills for every bit of new understanding one gains. Rather, one can apply previously developed skills to new information. Or consider an instance of gaining new understanding-how: if one understands-how to throw out a batter sliding into second base, then one can come to understand-how to throw out a batter sliding into third base by gaining some new information, but without having to develop new skills. The picture of gaining new understanding by slotting in new information into a network of cognitive skills and abilities is the same when it comes to practical or domain-specific skills: by combining new information with old skills, one can come to acquire new understanding.

Consider Kvanvig's (2003) discussion of grasping, whereby grasping involves the "internal, structural relationships between pieces" of the relevant information. In the case of easy understanding, the relationships between the relevant pieces of information are so easy to grasp that by successfully processing the content of what I am saying, and given your background knowledge and familiarity with the subject matter, you have done enough to grasp the relevant relationships. Again, consider the Pong case: if your background knowledge and familiarity with the relevant subject matter is enough such that you can make sense of what I mean when I say "move the paddle to hit the square" then by making sense of my utterance you have done enough to understand the relevant relationships between the bits of information. The lesson to be drawn from cases of easy understanding is that while easy understanding still requires a kind of grasping, this grasping does not stand in the way of easy understanding being acquired through testimony. Some things are just easier to grasp than others, and some things are so easy to grasp that by successfully processing the information that I have presented to you, you have already thereby grasped the relationships needed to gain the relevant understanding.

I noted above that even in cases of easy understanding, someone who had no familiarity with the relevant subject matter would not necessarily be able to gain the relevant understanding without more significant cognitive effort or without developing some new kind of ability. How easy it is to understand something, then, is partly a function of the thing being understood, but also partly a function of the subject. Consider, then, another, more general kind of understanding: $easy_s$ understanding. This kind of understanding is relativized to the subject: given S's background familiarity, knowledge, and cognitive skills and abilities, some things are easier to

understand for S than others[17]. One need only introspect on one's own strengths and weaknesses to find ready examples of things that are easy for one to understand and things that are difficult for one to understand: for example, understanding how to prove a theorem in predicate logic is easy for me, but it is difficult for my students; understanding the aesthetic advantages of the current generation of iPhone over the previous versions is difficult for me, but easy for my students; etc.

Given a sufficient amount of background familiarity, knowledge, and skills, there are some things that are very difficult for the vast majority of people to understand, but which are nevertheless easy for some particular individuals to understand. For instance, if someone is an expert in a given field, there might be things that are related to this field that are easy for the expert to understand but that might be very difficult for a novice to understand. As was the case for easy understanding, there are instances of $easy_s$ understanding regardless of what we take understanding's paradigmatic form to be. Consider the following examples:

> *Understanding-why* the butler did it is difficult for Watson, but easy for Sherlock Holmes.

> *Understanding-how* to perform the latest hypermodern defense is difficult for the chess novice, but easy for the chess master.

[17] All instances of easy understanding are thereby instances of $easy_s$ understanding, where the kind of background knowledge and cognitive skills needed for easy understanding are those that are taken for granted in a particular situation or context by the majority of people and in the majority of everyday contexts.

Understanding-□ the Riemann hypothesis is difficult for the mathematics undergraduate, but easy for the mathematics professor.

In all of the above cases the respective instances of understanding would be difficult for a novice – it would have to be obtained through conscious cognitive effort, and would, no doubt, require the development of new skills and abilities to be able to grasp the relevant concepts and relationships. But since Sherlock Holmes is an expert in reasoning, it is easy for him to understand-why the butler did it; since the chess master has so much experience playing chess and studying chess strategy, it is easy for her to understand-how to perform the latest hypermodern defense; since the mathematics professor has such a strong mind for mathematics, it is easy for them to understand-□ the Riemann hypothesis.

Easy understanding involves understanding for which most people possess the relevant background familiarity, knowledge, and cognitive skills, but for which they did not have to conscientiously develop, and I argued above that once these background conditions are in place, one can potentially gain easy understanding through testimony since the grasping that is required for understanding can occur automatically at the level of processing the testified information. In cases of $easy_s$ understanding, the story is the same: although the kind of familiarity, knowledge, and skills that an expert has regarding a given subject matter are ones that require a significant amount of conscientious cognitive effort to acquire, once they have been acquired that which would be difficult for a novice to understand becomes easy for the expert to understand.

Consider, for example, how one expert might communicate understanding to either a novice or another expert. In the former case, it may very well be that all the expert can do is lay the relevant groundwork: they can, to the best of their ability, communicate the beliefs and

knowledge to the novice that will ultimately form the basis of understanding, but there is still significant work that the novice needs to do in order to acquire that understanding for themselves. When an expert testifies something that they understand to another expert in their field, however, the relevant groundwork has already been laid, and thus no significant cognitive effort needs to be expended on behalf of the hearer. Again, consider the underlying mechanisms that are necessary for the transmission of *knowledge*: one cannot acquire knowledge that *p* through testimony if one does not possess at least some background beliefs or concepts that can allow one to make sense of the truth of *p*. Once these concepts and cognitive abilities are in place, the acquisition of knowledge can be easy. And although there is clearly *something* that is going on internally when knowledge is acquired – I cannot, for instance, form your belief for you – this requirement does not stand in the way of knowledge being directly acquirable through testimony. Of course, you do not have to *actively* form such a belief, in the sense of expending any significant cognitive effort, and indeed you might not have any control over whether you gain the relevant belief or knowledge at all. But the same seems to be the case in those cases of easy understanding and $easy_s$ understanding: although whatever grasping takes place has to be something that the hearer does, this is not enough to stand in the way of directly acquiring the relevant understanding.

Of course, this is not to say that *all* instances of understanding can be acquired through testimony, or that there is any instance of understanding that all people can acquire through testimony: difficult understanding, and that which is difficult for one to understand, presumably, cannot always be acquired in this way. One general category of understanding that is difficult to acquire is that which pertains to an entire subject matter: an example that we have seen is that of understanding quantum mechanics, something that is difficult not only because the subject

matter is complex, but because of the quantity of information that is needed to be grasped. However, we have also seen that not all instances of understanding have to be so large in scope: while instances of understanding might not be so discrete as to pertain to individual propositions, there are still new instances of understanding that one can gain about specific things. This is perhaps most straightforward in the case of $easy_s$ understanding: an expert in a given field might have a lot of knowledge, understanding, and, with the relevant cognitive skills and abilities in place, then gain new understanding concerning some development in their field. We would no doubt say that in these situations the expert has gained some new understanding[18].

There is also a very large gray area between "novice" and "expert": someone who is somewhat familiar with a given subject matter will have to work harder to gain understanding than someone who is very familiar with it, and someone who is not at all familiar will have to work harder still. Consider again some of the examples discussed earlier: if someone knows and understands a lot about baseball aside from intentional walks, then understanding-why the pitcher intentionally walked the batter could be as simple as merely acquiring new information about baseball strategy, while someone who is less familiar with baseball might have to do more to put together the pieces. Or consider an experienced boxer, who has fought right-handed opponents for many years, who then learns that "beating a southpaw is just like beating a right-hander, except you have to counter their left instead of their right": given the extent of the skills that the boxer has developed, she might not need to do anything more beyond processing this new information in order to understand-how to beat a southpaw, whereas a less-experienced boxer, when presented with the same information, might have to work a lot harder, either by

[18] We would probably also say that the expert also now has a better understanding of their specific field. But to say that one has gained some new understanding and that one has a *better* understanding of something they had some understanding of before are not incompatible statements.

doing more cognitive work with regards to the new information and what they already know and understand, or by sparring with a southpaw. Finally, consider a political pundit who has yet to meet the latest Republican presidential candidate, but is told "he's just like the last guy, only even more fiscally conservative." Given the extent of the pundit's experience and expertise, processing this information seems sufficient to give him new understanding, while a less-experienced political analyst would have to do more, either in the form of gaining more information or conscientiously applying cognitive or other skills, to gain the same understanding.

I have argued that in all of the above cases, experts can acquire new understanding simply by acquiring new information, and since new information can be acquired directly through testimony, so too can new understanding: in at least some cases of $easy_s$ understanding, the only thing preventing someone from understanding-why something is the case, how something is done, or some object or phenomenon, is the relevant informational component. Again, it still remains the case that when receiving this new information, the subject must do *something* with it to gain understanding. But the same is the case when gaining new knowledge as the result of gaining new information: the mere fact that something has to go on in the mind of subject when gaining knowledge does not mean that one does not acquire one's knowledge directly through testimony. What *would* stand in the way of one acquiring an epistemic relationship directly through testimony would be if there had to be some significant or active cognitive work on the part of the subject. But when something is easy or $easy_s$ for someone to understand, gaining that new understanding need not be any more cognitively taxing than when one gains new knowledge.

The purpose of introducing the notions of easy and $easy_s$ understanding was to show that the grasping component of understanding does not itself have to be acquired through testimony

in order to gain understanding; rather, the informational component of a given instance of understanding can be acquired through testimony and grasped with structures and abilities that are already in place. The grasping component on its own, then, does not prevent understanding from being acquirable through testimony; rather, what might prevent an instance of understanding from being acquirable through testimony is that hearer does not possess the relevant structures or cognitive abilities needed to do the requisite grasping.

One might, however, think that there is an aspect of understanding that I am ignoring, one that may very well prevent it from being acquirable through testimony. I turn to this next.

4. Understanding, Achievement and Value

One of the motivations behind discussing understanding in the first place is that it seems to have *value*. While knowledge has in recent history been taken to be the primary bearer of epistemic value, it has recently been called into question whether knowledge has any value over and above its traditionally-held component parts (such as truth, justification, belief, and some appropriate de-Gettierizing condition) either collectively or individually[19]. If knowledge is not uniquely valuable, the reasoning goes, then perhaps we should be looking for an epistemic relationship that *is*, and understanding seems to be a prime candidate. Why might understanding be uniquely valuable? One reason that has been given is that understanding requires a certain kind of *achievement*, one that is not required by knowledge. For example, Pritchard (Pritchard, Millar, and Haddock, 2010) distinguishes two different kinds of achievements, what he calls *weak achievements* and *strong achievements*: weak achievements are "successes that are because of ability", whereas strong achievements are "successes that are because of ability where the

[19] For an overview of some of these issues, see Riggs (2008), and Pritchard, Millar, and Haddock (2010).

success in question either involves the overcoming of a significant obstacle or the exercise of a significant level of ability" (70). Pritchard argues that while on some conceptions of knowledge, knowledge requires a cognitive achievement on the part of the knower, it is at most a weak cognitive achievement; understanding, on the other hand, requires a strong cognitive achievement.

Let us grant, for the time being, that understanding requires a strong cognitive achievement in Pritchard's sense. One might then have the following objection to my conceptions of easy understanding and $easy_s$ understanding: since, in none of the cases I describe above does the hearer exhibit a strong cognitive achievement, they do not count as cases of understanding at all. Consider again the case of *Jenny the Tourist*: if Jenny were to have achieved anything at all, it would be at best a weak kind of achievement. This kind of achievement might be good enough for her to know where the Sears Tower is, but since she did not overcome any significant obstacles or exercise her abilities in any significant way, her achievement would not be good enough to qualify her as having understanding. Is the story not the same when it comes to easy understanding? Consider again how I might tell you how to play the videogame Pong: "move the paddle and hit the square". After hearing this we can now sit down together and play Pong, but what have you really gained from me as a result of my testimony? You have not, it seems, had to overcome any significant obstacles, nor did you exercise your cognitive abilities in any significant way. If you have not achieved anything in the strong sense as a result of our interaction, then perhaps you do not have any understanding. Strong cognitive achievements might then be incompatible with testimony generally: acquiring information through testimony, we might think, is something that is by its very nature easy, and does not require any significant cognitive achievement. That is not to say that one cannot learn

new and difficult things through testimony, but again, the testimony itself serves merely to lay the relevant groundwork: significant cognitive achievements are things that the subjects have to achieve for themselves.

While this line of argument is one that would provide a principled reason why understanding cannot be acquired through testimony, I do not think it is successful. To see why, consider those strong achievements that are nevertheless easy for someone: Pritchard's own example is one of Tiger Woods sinking a long putt (Pritchard, Millar, and Haddock, 2010: 68). Sinking a long putt is very difficult for me, but it is easy for Tiger Woods; however, when Tiger Woods sinks a long putt, the ease with which he does so, argues Pritchard, does not diminish his achievement. We can still credit Tiger Woods with an achievement in the strong sense because he is nevertheless exercising a significant ability, and while he is not overcoming a significant obstacle *in the very moment in which he makes the putt*, he doubtless had to overcome such obstacles while he was developing his skills in the past. In general, something that can be easy for someone can still qualify as an achievement in Pritchard's strong sense.

The same, however, seems to be the case when it comes to cognitive achievements: being an expert in something – possessing the relevant background familiarity, knowledge, and skills – makes it easy for one to understand things that pertain to that person's area of expertise, just as sinking a series of long putts is easy for Tiger Woods. And just as we should not consider Tiger Woods' putts to be achievements in the weak sense simply because they are easy for him, nor should we consider the expert's cognitive achievements any weaker simply because they are easy for her: in gaining understanding the expert still exercises a significant ability, and in exercising that ability displays the overcoming of a significant obstacle (even if, as is the case with Tiger Woods, this obstacle was one that was overcome not in the present instance, but in the

development of one's abilities in the past). Something that is easy$_S$ to understand, then, does not disqualify it from being a cognitive achievement in the strong sense, and thus does not disqualify it from being an instance of understanding[20].

We also saw earlier that when it comes to acquiring knowledge through testimony, one can gain knowledge in a way that is not primarily attributable to the knower: in *Jenny the Tourist*, Jenny gains the relevant knowledge, but whatever kind of cognitive achievement occurs in such an exchange is not one that is primarily attributable to Jenny. In the case of gaining easy$_S$ understanding through testimony, however, the relevant cognitive achievement is still attributable to the understander: it is, after all, their hard work that has put them in the position to be able to acquire that understanding in the first place[21]. Ease of acquisition, then, is incompatible with neither significant achievement nor being attributable to the acquirer.

Good, then, for easy$_S$ understanding, but what about easy understanding? One might wonder whether easy understanding should qualify as understanding at all, given that it does not seem to require a significant cognitive achievement. Or, consider what Wilkenfeld, Plinkett, and

[20] One might wonder whether we should, in fact, consider Tiger Woods' putts to be achievements in the strong sense; after all, they are still *easy* for him, and while we might consider it to be quite the feat to sink a long putt, Tiger himself might not conceive of it as anything special. I do not have any stake in whether Pritchard's conception of strong cognitive achievements is correct; I merely assume it here for the sake of argument. However, if we were to think that Tiger Woods' putts did *not* count as achievements in the strong sense, Pritchard's view might run into trouble with the cognitive analogue: we would have to say that an expert's acquisition of new information that is easy for them would not qualify as a strong cognitive achievement, and would thus not qualify as an instance of understanding. As a result, we would have to say that experts are unable to acquire hardly any new understanding in the relevant field. Furthermore, the more expertise in the form of skills, abilities, and knowledge that an expert gained, the less new understanding they would be able to acquire, as their additional expertise would preclude the possibility of being able to cognitively achieve in the strong sense. This is, I think, somewhat counterintuitive: experts, it seems, acquire new understanding in their field all the time, and gaining new expertise should result in one being able to acquire understanding more easily, not stand in the way of acquiring new understanding at all. Again, while it might seem tempting to say that Tiger Woods' long putt does not qualify as a strong achievement because he is so good at golf, it is much less tempting to say, for example, that a physics professor's acquisition of new information does not qualify as understanding because she is so good at physics. Thanks to an anonymous referee for suggesting I address this objection.

[21] One might argue that we can similarly attribute an achievement to Jenny: she did, after all, successfully seek out someone to ask, and possesses the relevant background beliefs and knowledge to be able to make sense of the passerby's testimony. We might think, however, that even if we should attribute some kind of achievement to Jenny, it is not one that involves the overcoming of a significant obstacle, either in the instance or before.

Lombrozo (forthcoming) have argued, namely that "understanding-why has higher demands for knowledge-why when it comes to explanatory depth" (4), where one is able to provide a deep explanation if one is able to see connections between pieces of relevant information, extrapolate from relevant causes and effects, amongst other requirements[22]. One might think, then, that in purported cases of easy understanding since one could only provide a shallow explanation for why relevant phenomenon occurred, then one does not actually have understanding in these cases at all[23].

Above I assumed Pritchard's view for the sake of argument to see if requiring a significant cognitive achievement would provide a principled reason why understanding could not, in general, be acquired through testimony. If, according to this picture, easy understanding does not qualify as a legitimate kind of understanding, then my argument goes through unharmed, since my argument applies to cases of easy$_S$ understanding, and cases of easy understanding will simply not count. The same can be said for a view according to which understanding-why requires significant explanatory depth: if what I have presented as cases of easy understanding fail to be legitimate cases of understanding, then they do not affect my arguments concerning legitimate cases of understanding. Furthermore, cases of easy$_S$ understanding will be able to meet the explanatory depth requirement: because of an expert's background knowledge and abilities, they will be able to provide deep explanations for why some new information gained through testimony is the case. Again, as was the case with significant cognitive achievements, one does not have to acquire the knowledge and abilities that can provide explanatory depth all at once.

[22] Wilkenfeld, Plinkett, and Lombrozo do not provide an explicit theory of "explanatory depth"; the version I present here is based on a collection of remarks from the authors' (forthcoming). For more a more detailed examination of explanatory depth, see Ylikoski and Kuorikoski (2010).
[23] Thanks to an anonymous referee for suggesting I address this objection.

I stated earlier, however, that discussions of understanding tend to focus on instances of understanding that are difficult, and that it was partially as a result of this focus that made it seem as though there was something about understanding generally that prevents in from being acquired through testimony. A similar problem occurs in discussions of the nature of understanding: the cases I have listed as instances of easy understanding are, I think, natural and intuitive, and there is, to my mind, no antecedent reason why certain instances of understanding cannot be simple, or why we cannot understand things that, by their very nature, only admit of shallow explanations. To show otherwise is a burden of proof that those writing on understanding need to assume.

We saw that one of the reasons why we might conceive of understanding as more cognitively demanding, or more difficult to acquire than knowledge, is that we can more easily attribute to it a special kind of epistemic value. If understanding can, in fact, be acquired through testimony, does this affect its epistemic value? I don't think so. Just as the fact that some things are easy for some people does not, in itself, decrease that thing's value, neither does the fact that some understanding is easy for some people to acquire decrease the value of that understanding. The fact that knowledge is sometimes easy to acquire through testimony has been taken to be an indication that knowledge is not particularly epistemically valuable since, as cases like *Jenny the Tourist* show, one can acquire knowledge with very little effort on one's part. However, it seems that drawing general conclusions about the value of an epistemic relationship from individual instances in which one can acquire it easily is a mistake: it is likely that for any given subject matter and any epistemic relationship one can have with it, there will be someone, somewhere, for whom acquiring that relationship with that subject matter will be easy.

None of this is to deny that some things are more difficult to understand than others. Nor does it deny that there are some instances of understanding that cannot be acquired through testimony by some subjects: if something is difficult for a subject to understand, then it may very well be the case that all that that subject can acquire through testimony is the groundwork for understanding. However, I have argued that none of the components of understanding – its relationship to knowledge, factivity, susceptibility to luck, paradigmatic form, or grasping – stand in the way of being able to acquire understanding through testimony. In those instances in which one is unable to gain some understanding through testimony, then, what stands in the way is that it is difficult for the subject, not that it is an instance of understanding.

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