PHILOSOPHICA

2006 Vol. 78

THE EPISTEMOLOGY OF TESTIMONY

CONTENTS

Dan O'Brien, *Introduction to the Epistemology of Testimony* 5

Duncan Pritchard, *A Defence of Quasi-reductionism in the Epistemology of Testimony* 13

Sanford C. Goldberg, *Testimony as Evidence* 29

Dan O'Brien, *Testimony, Engineered Knowledge and Internalism* 53

Elizabeth Fricker, *Martians and Meetings: Against Burge's Neo-Kantian Apriorism about Testimony* 69

Robert Audi, *Testimony as an a Priori Basis of Acceptance: Problems and Prospects* 85

Peter J. Graham, *Can Testimony Generate Knowledge?* 105

Philosophica 78 (2006) pp. 105-127

CAN TESTIMONY GENERATE KNOWLEDGE?

Peter J. Graham

ABSTRACT

Orthodoxy in epistemology maintains that some sources of belief, e.g. perception and introspection, generate knowledge, while others, e.g. testimony and memory, preserve knowledge. An example from Jennifer Lackey – the Schoolteacher case – purports to show that testimony can generate knowledge. It is argued that Lackey's case fails to subvert the orthodox view, for the case does not involve the generation of knowledge by testimony. A modified version of the case does. Lackey's example illustrates the orthodox view; the revised case refutes it. The theoretical explanation of knowledge from testimony as information transmission explains how testimony transfers knowledge and why it can generate knowledge. It also reveals the real difference between so-called "generative" and so-called "preservative" sources. The former extract information; the latter transmit information.

Perception provides knowledge of the world, introspection knowledge of our selves, and mindreading knowledge of other minds. Reasoning extends knowledge beyond things we already know. Perception, introspection, mindreading, and reasoning are all ways of *generating* new knowledge, generating knowledge of events, facts, and states of affairs not known before. Memory differs. Memory *preserves* knowledge of things we already know. If I knew something at an earlier time, say on the basis of perception, and then I remember it now, then I know it now, but only because I knew it before. Testimony (the process of forming beliefs on the basis of understanding what other people say) looks like memory. If someone else knows something and tells me what they know, and I accept what they say, then I come to know it too. But I only acquire knowledge from accepting what they say if they know it already. Testimony, like memory, doesn't generate knowledge where there was no knowledge before; testimony *preserves* knowledge.

This is a natural and prima facie compelling view about the different "sources" of knowledge. Some are generative, while others are preservative. Nature, in her wisdom, provided ways to acquire, extend, store, and transfer knowledge. This view is widespread; quotes in favor of the view are commonplace in the literature. It's the orthodox view on these matters.

But while prima facie compelling, the orthodox view is not entirely correct. At root, something else is going on, something that explains why, in the ordinary case, testimony and memory preserve knowledge, while perception, introspection and reason generate knowledge. The underlying fact is that perception, introspection, and reason *extract* and extend information, while testimony and memory *transmit* information. This underlying fact explains why testimony and memory rarely generate knowledge. This in turn explains the appeal of the orthodox view. But it also shows why testimony and memory can generate knowledge, and so reveals that the orthodox view is only approximately correct. I will treat the case of testimony here, and set aside memory for another day.

Here's my plan. In the first section I'll discuss two versions of a familiar case – the Schoolteacher case – each intended to show that testimony can generate knowledge. I begin with the concrete. In the second section I ascend to theory. I sketch my account of the general facts underlying knowledge from testimony. The theory gets at a real difference between so-called "generative" and so-called "preservative" sources of knowledge, and in so doing explains the plausibility of the orthodox view. Thirdly and lastly I apply the theory to the two versions of the Schoolteacher case. I explain just what is going on in those cases. We'll see exactly why testimony can generate knowledge.

1. The Schoolteacher Case

Jennifer Lackey's work on testimonial knowledge has received a good deal of attention. And a particular example of hers– The Schoolteacher case – has been at the centre. It's a prima facie compelling case. In many ways it's all too familiar. It certainly deserves the attention it has

received.[1] But though it poses an initial challenge to the orthodox view, we'll see that it's not, strictly speaking, a counter-example. Explaining why it doesn't work will deepen our understanding of the orthodox view, and in so doing show what a good counterexample would look like. It's a natural place to begin our inquiry.

1.1 Mrs. Smith

Here is Lackey's case:

> Suppose that a Catholic elementary school requires that all teachers include sections on evolutionary theory in their science classes and that the teachers conceal their own personal beliefs regarding this subject matter. Mrs. Smith, a teacher at the school..., goes to the library, researches this literature from reliable sources, and on this basis develops a set of reliable lecture notes from which she will teach the material to her students. Despite this, however, Mrs. Smith is a devout creationist and hence does not believe that evolutionary theory is true, but she none the less follows the requirement to teach the theory to her students...[I]n this case it seems reasonable to assume that Mrs. Smith's students can come to have knowledge via her testimony, despite the fact that she [does not believe evolutionary theory] and hence does not have the knowledge in question herself. That is, it seems she can give to her students what she does not have herself. For in spite of Mrs. Smith's failure to believe and therewith to know the propositions she is reporting to her students about evolution, she is a reliable testifier for this information, and on the basis of her testimony it seems that the students in question can come to have knowledge of evolutionary theory. (Lackey, 1999, p. 477)

Mrs. Smith "accepts" (she acts as if she believes) the theory of evolution (for context-specific practical purposes); she does not believe the theory. The phenomenon of acceptance without belief is commonplace. A soldier may write a letter home the day before a battle, discussing holiday plans.

[1] Lackey's paper will soon be reprinted in a leading anthology in epistemology (Kim & Sosa 2008). The example also plays an important role in her essay "Learning from Words" (Lackey 2007) and her book by the same name (Lackey 2008).

He accepts – acts as if he believes for practical purposes – that he will survive the coming battle. But he doesn't believe it; he knows the odds are against him. A host may invite someone to a dinner party who is a long-time friend who has just been accused of a crime. The host accepts that his friend is innocent, but can't bring himself to really believe it. The phenomenon of accepting a proposition – acting as if one believes for context-specific practical purposes without actually believing it – happens all the time.[2] And since Mrs. Smith accepts but does not believe the theory, it's obvious that she does not know it, for knowledge requires belief.

It's also obvious that her students *learn* evolutionary theory from her lessons. In practice, she's no different from the other teacher down the hallway who gives the same lessons but actually believes the theory. The children come to know something they did not even believe before. (I'll try to persuade the unpersuaded of this latter assessment further along.)

Lackey takes this example to show testimony can generate knowledge, for the students learn something from a speaker who asserts that *p* but does not know that *p*. Knowledge that *p* is acquired through testimony, though the speaker doesn't know p herself.

But as it stands, it is not a counterexample. Firstly, on the orthodox view, the explanation for why anyone learns from testimony turns on *someone in the chain of communication* knowing the fact *first-hand*. A hearer can learn from a chain only when the chain preserves knowledge generated in a non-testimonial fashion. Here is Elizabeth Fricker:

> If H knows that *p* through being told that *p* and trusting the teller, there is or was someone who knows that *p* in some other way...[There] cannot be a state of affairs that is known only through trust in testimony. (2006, pp. 240–1)

And Michael Dummett writes:

> Memory is not a *source*...of knowledge: it is the maintenance of knowledge formerly acquired by whatever [some other] means. ... The same naturally applies to taking something to be so, having

[2] For the distinction between belief and acceptance that I rely upon here, see Bratman (1992).

> been told it: the original purveyor of the information – the first link in the chain of transmission – must himself have known it, and therefore have been in a position to know it, or it cannot be knowledge for any of those who derived it ultimately from him....Testimony should not be regarded as a *source*...of knowledge: it is the transmission from one individual to another of knowledge acquired by [some other] means. (1993, pp. 420–22)

Secondly, once knowledge gets into a chain of communication, orthodoxy allows for cases where not every member of the chain knows the proposition passed along. Here is Tyler Burge:

> In requiring that the source [the recipient's interlocutor] have knowledge if the recipient is to have knowledge based on interlocution, I oversimplify. Some chains with more than two links seem to violate this condition. But there must be knowledge in the chain if the recipient is to have knowledge based on interlocution. (1993, p. 486)

On the orthodox view, what is essential is not whether *the particular speaker* on whom the hearer relies knows of what he speaks, but rather whether *the chain* "knows", in a *non-testimonial* manner, the proposition the speaker asserts. When an advocate of the orthodox view simply says that "a hearer cannot learn that *p* from a speaker that does not know that *p*", the advocate is using that simple claim as shorthand for the longer claim that "a hearer cannot learn that *p* from a chain of communication that does not know that *p* in some non-testimonial fashion." Counter-examples to the shorthand formulation are thus not counter-examples to the orthodox view.

It should now be clear to the reader why Lackey's case is not a counter-example to the orthodox view. In Lackey's case, though the Schoolteacher does not know evolutionary theory (for she does not believe it), the authors Mrs. Smith relies upon know it. The case involves a "skip" in the chain of communication because the teacher "accepts" something she does not believe, and acceptance can mimic the role of belief in explaining why someone says something to another person. The children learn from Mrs. Smith because Mrs. Smith is a link in a chain of communication that possesses knowledge of evolution, knowledge generated in non-testimonial ways. Since not every link in a chain must

possess the knowledge to pass the knowledge along, Lackey's case is clearly not a counter-example to the orthodox view. It doesn't show that testimony can generate knowledge.[3]

To a certain extent, Lackey is sensitive to the point I've just made. She's on to the fact that defenders would say that in her example Darwin, Gould, inter alia, know the theory, and it is their knowledge that explains why the children learn from Mrs. Smith. In reply, Lackey argues that the orthodox view is question-begging. For it engages in "source-shifting" to ensure that "the source" of a hearer's knowledge is always a speaker in the chain with knowledge to transfer. *If Mrs. Smith has knowledge*, then Lackey says orthodoxy would say that *Mrs. Smith* is the source. But *if she lacks knowledge*, then Lackey says orthodoxy would say that *a previous knower* in the chain (perhaps Darwin himself) is the source of the children's knowledge. But then it's plain that orthodoxy is simply "shifting" sources as the case requires. Lackey writes:

> Let us ask the following question: if the teacher in our envisaged case had had the requisite belief [and so knew of what she spoke], *would she have been the source of the children's knowledge or would it have been Darwin*? I take it that proponents of [the orthodox view] would respond that, in this case, *Mrs. Smith is the source* of the knowledge in question precisely because they countenance *chains* of testimonial knowledge. That is, we need not receive the report that *p* directly from Darwin himself because testimony is a source whereby people can acquire information across times, places and persons. Given this, it seems natural to assume that proponents of [the orthodox view] would countenance *Mrs. Smith as the source* of the children's knowledge if she had had the requisite beliefs [and so knew of what she spoke]. But then to deny that she is the source in the envisaged case merely because

[3] Paul Faulkner, an advocate of the orthodox view, says that only the chain (and not the last link of the chain) needs to "know" the proposition the hearer learns. Why? Because of cases just like Lackey's. After citing the passage I've just quoted from Burge, Faulkner gives the following case to illustrate Burge's point: "Suppose a teacher propounds a theory he does not believe. The teacher's rejection of the theory seems to imply that he does not have knowledge of it. However, if the theory is known, then it seems likely that the students could be in a position to acquire this knowledge" (Faulkner 2000).

> she lacks the beliefs at issue is question-begging. (pp. 478–9, emphasis added)

Lackey's rejoinder gets orthodoxy wrong. The orthodox view doesn't engage in "source-shifting." The *generative* source of knowledge is always some speaker or speakers in the chain of communication who know first-hand, who know in some non-testimonial way.[4] The *proximate* source – the "triggering" report – of someone's testimony-based *belief* need not be the *generative* source of their testimony-based *knowledge*. In Lackey's case, Darwin, Gould, etc., are the *generative* sources in the chain, and Mrs. Smith is, as it were, the *proximate* source. The children learn when Mrs. Smith doesn't believe the theory because of Darwin, etc. And the children would learn if she did believe (and hence knew) the theory for the very same reason. It's because Darwin, and a host of others in the chain of communication, know (elements of) the theory first-hand. Orthodoxy doesn't "shift sources" to avoid cases like Mrs. Smith. The orthodox view is not question-begging on this score.

Orthodoxy holds that testimony preserves, but does not generate, knowledge. Perception paradigmatically generates knowledge; perception is the starting point for knowledge of the world. Once knowledge is acquired, testimony can only pass it on; testimony preserves knowledge across persons. How could testimony, the thought goes, *generate* knowledge? Testimony is not itself an independent lens onto the world; it's not a sixth sense. It's only a means of making common what someone else has already discovered. Testimony disseminates; it doesn't discover. That's why hearers can only acquire knowledge from a chain that already possesses knowledge, even if not *every* member in the chain knows. Gaps are unobjectionable; generation is impossible.[5]

---

[4] Here I oversimplify. In cases of collaborative work, for example in the sciences, A may know P first-hand, B may know Q first-hand, and C may know R first-hand. D then puts it all together, and infers S. There is a sense in which no one in the "S-chain" knows S first-hand. But still all of the "parts" that go into the knowledge are known in first-hand ways. Nowhere in collaborative cases would orthodoxy see knowledge generated by testimony alone.

[5] In my earlier work on these issues, though I appreciated the point about the possibility of gaps in the chain of communication, I didn't fully appreciate the intuition driving the orthodox view. I didn't fully grasp exactly what defenders

1.2 Mr. Jones

Armed with our understanding of what it means to say that testimony cannot *generate* knowledge, I now offer another version of the Schoolteacher case. Building on Lackey's case, we can construct a version that really does show that testimony can generate knowledge.

Suppose Mr. Jones, a devout creationist, teaches second grade at an elementary school that requires all teachers to include a section on evolutionary history. He is required to keep his personal views to himself. He develops a reliable set of notes on evolutionary theory, and even acquires a sophisticated understanding of fossils and the fossil record, from reading *The Origin of Species* and from videotaped lecture courses from Richard Dawkins and Stephen Jay Gould. He "accepts" the theory for the purposes of teaching his students, fulfilling his duty to the school board, and earning his paycheck. One day on a field trip, weeks before they learn about evolutionary biology, he discovers a fossil. Mr. Jones rightly deduces that the fossil is of a creature now long extinct, and tells his students that the extinct creature once lived right where they are, millions of years ago. Given his understanding of the theory, and his commitment to teach evolution despite his devout creationism, he would not easily say that the extinct creature lived there millions of years ago if it did not. But he does not believe it, in part because he does not believe that the earth is millions of years old, among other things. The children accept his report, and come to believe that the creatures once lived right where they are, millions of years ago.

Now it seems obvious that Mr. Jones does not know of what he speaks, because he does not even believe what he says. And it seems obvious that the children learn (come to know) by accepting Mr. Jones' report. (Once again, if you are not persuaded that the children learn, I'll try to change your mind soon.)

Does this case clearly avoid the problem that Lackey's faces? Has the chain of communication generated new knowledge, knowledge in a proposition that no-one in the chain of sources knows in a non-testimonial way? The answer is clearly yes.

---

had in mind when they said that testimony cannot *generate* knowledge, that testimony, unlike perception, introspection, and reason, isn't itself a way of *discovering* facts not known before. See my (2000a) and (2000b).

Firstly, Mr. Jones reports a *particular* matter of fact that *no-one* has ever known before; he has made a discovery. Perhaps it is a very important discovery, a discovery that will overturn a well-established view of evolutionary history. He may even win a scientific prize. Mr. Jones is clearly not passing on a particular piece of knowledge that anyone else already knows. No-one else has ever even believed it, let alone reported it. If anyone gets a chain of communication up and running about this particular fact, he does. He is the first link in the chain of communication about this particular matter of fact.

Secondly, who are the first to know this fact? The Schoolteacher does not know it, for he does not even believe it. Since the children come to know something no-one has ever known before, they are the first to know. Testimony has *generated* knowledge.

This version avoids the problem Lackey's version faced. There is no previous knowledge that *p* preserved in the chain of communication. Someone, relying on testimony, can learn that *p* from a speaker who says that *p* even though *no-one at all* in the chain of communication knows that *p*. The case of Mr. Jones is a genuine counterexample to the orthodox view. Testimony sometimes *generates* knowledge.

Below I'll offer a "deeper explanation" of why this is so. But before I turn to that explanation, I will respond to Robert Audi's criticisms of the Schoolteacher case designed to show that the children don't learn from the Schoolteacher. If he's right, the intuitive case against the orthodox view is jeopardized.

1.3 Reply to Robert Audi

Robert Audi (2006, pp. 29-30) thinks the children don't acquire knowledge from the Schoolteacher. If you are inclined to think that too, perhaps you do so for similar reasons. My reply to Audi might thus change your mind. I'll focus on Mr. Jones, but everything I say applies with equal force to the case of Mrs. Smith.

Audi first objects that there is something epistemically amiss that prevents the children from acquiring knowledge, for since Mr. Jones teaches something he does not believe because the school requires him to do so, he would teach anything that he thinks is false if he were required to do so. Hence he cannot be a reliable teacher, for he would report true

things just as likely as he would teach false things. And since he cannot be a reliable teacher, the children cannot learn from him.

This strikes me as too strong. Many teachers teach whatever they are instructed to teach. They differ from Mr. Jones only in also believing what they are instructed to teach. But they are reliable instructors only if what they are told by the school to teach is itself true. What makes or breaks the reliability of Mr. Jones or any other elementary teacher is the reliability of what the school requires of its teachers. Mr. Jones, despite his willingness to teach what he does not believe, is no less reliable than his co-workers. So what makes Mr. Jones reliable overall, and so what makes it possible for children to learn from him, involves, at least in part, what the school requires him to teach. As long as the school requires him to teach things that are mostly true, then he'll be just as reliable as any other teacher. It is the school that ensures the overall reliability of its teachers, and so it is the school that ensures the overall reliability of Mr. Jones.

Audi recognizes that the case of Mr. Jones has more plausibility once we assume that the school would not require him to teach something unless it were well-evidenced, and so he would not teach something unless it were likely to be true. But he thinks another problem arises once we note the role of the school in ensuring the overall reliability of Mr. Jones. Audi argues that *either* the children know that this is what the school is up to, and so are relying essentially on background knowledge when they believe what Mr. Jones says, and so their belief about what the fossil shows is not entirely *testimonially*-based, *or* their beliefs are entirely testimonially-based but since Mr. Jones would "deceive them when job retention requires it", the "testimonial origin" of their beliefs would not be "an adequate basis" for knowledge.

Now I don't think we should worry too much about the first horn. These are, after all, second-grade school children, and so probably don't worry themselves about whether their teachers or schools are trustworthy. Second-graders usually don't think about, or even possess, the background knowledge Audi appeals to. They certainly do not treat their teachers or schools as instruments that they have independently calibrated for accuracy. They don't have independent and sufficient grounds for thinking their teachers are trustworthy, at least not about the subjects they teach. By and large, they take their teacher's reports at face

value. If anyone has genuinely "testimony-based" beliefs elementary school children do. Indeed, if Audi were right about this, almost no belief acquired in school *per se* would be a genuinely testimony-based belief, and that can't be right.

And the second horn just takes us back to the first point, the point that there is something fishy about Mr. Jones because he would say what he does not believe just to keep his job. But as the case is set up, the school insures that Mr. Jones teaches what is known, and Mr. Jones is committed to teaching what he is required to teach, and so, when it comes to the newly discovered fossil, he says what is true. Indeed, in the actual circumstances, he would only say what is true if it were. Audi is right that there are far off worlds where the school board has required Mr. Jones to teach something false (and he does not believe it) but teaches it just to keep his job. In that world he would not be a reliable instructor. But in the actual world and in nearby worlds, if he says *p*, then *p*. The school's requirements and the teacher's commitments insure that this is so. Audi's objections are, I think, ineffective. Mr. Jones, like Mrs. Smith, really is a reliable reporter of certain facts, even though he does not believe them himself. And his students, nevertheless, really can learn things from him, things he only "accepts" but does not believe.

2. Testimony-Based Knowledge as Information Transmitted

I now turn to my "theoretical" explanation of knowledge through testimony, which involves the technical notion "information." I'll start with that, and then explain its connection to knowledge. The real distinction between so-called "preservative" and "generative" sources will emerge. We'll see why the orthodox view is appealing though only approximately correct. Then in the next section we'll see exactly how the two versions of the Schoolteacher case work.

2.1 Information-Carrying and Knowledge

I begin with the technical notions "information" and "information-carrying." I'll use these notions to explain knowledge and knowledge through testimony.

"Information", as I use it, is not to be confused with the casual use of 'information' as a putative fact or (possibly false) proposition. In the technical sense, there is no such thing as "misinformation." Think of pieces of information as facts, signals, events, or states of affairs; they are themselves pieces of reality, neither true nor false. Wittgenstein said the world is the totality of facts. If pressed, or offered a spot in a New Age movie, I might say that it's all just information.

Signals, events, or states of affairs are also "information-carriers" (Dretske 1981). Pieces of information "carry" other pieces of information. Information carrying is a relationship between pieces of information (between signals, events, or states of affairs). A signal, event, or state of affairs R carries the information that P if and only if R would not be the case unless P. John's knock at the door (a piece of information) carries the information that the party is about to start (another piece), as John would not knock on the door unless he were there to get the party started. Flies in the kitchen carry the information that fruit was left out over night, as flies would not be in the kitchen unless fruit were left out on the table. Patterns of sediment carry information about retreating glaciers, as there would be no patterns of sediment like that unless the glaciers retreated in just that way. Information carrying is a counter-factual supporting relationship between two (or more) pieces of information.

This idea needs to be made more precise, as the subjunctive phrase "R would not be the case unless P" is ambiguous. Truth-functionally, "R would not be the case unless P" translates into $(\sim R \vee P)$, which also means $(R \rightarrow P)$ as well as $(\sim P \rightarrow \sim R)$. So the subjunctive "R would not be the case unless P" can be read as "if R were true, then P would be true" $(R \rightarrow P)$ or "if P were false, then R would be false as well" $(\sim P \rightarrow \sim R)$. But since subjunctive conditionals do not contrapose, these two subjunctives are actually very different (Sosa 1999).

The first subjunctive conditional is known as the "safety" conditional, and the second as the "sensitivity" conditional. In possible worlds talk, "if R were true, then P would be true" (safety) becomes "in all nearby worlds, if R then P." And "if ~P were true, then ~R would be true" (sensitivity) becomes "in the nearest possible world where ~P, then ~R." We can now see why these subjunctives don't contrapose. The truth-conditions for safety conditionals involve nearby worlds, but the truth-conditions for sensitivity conditionals involve the nearest possible

world where P is false, and that world may not be in the class of nearby worlds.[6]

Because Dretske uses the phrase "R would not be the case unless P" to indicate that R carries the information that P, Dretske's view of information carrying is ambiguous. In what follows I will diverge from Dretske, and assume that a signal R carries the information that P if and only if R is safe that P. And so, in possible worlds talk: R carries the information that P if and only if in all nearby worlds, if R, then P.[7]

Information is everywhere. Information carrying is everywhere too, for pieces of information stand in subjunctive relationships to other pieces of information. States of our brains/minds are information carriers too. Think of your present perceptual experience of this page. Odds are you wouldn't have that perceptual experience unless the letters on the page were arranged just as they are. Your perceptual experience carries information about this essay. And right now that perceptual experience is causing and sustaining certain perceptual beliefs in you. Your beliefs are *based on* an information-carrying signal. Information in the world (the arrangement of letters, for example) gets "picked up" or "extracted" by your perceptual system; your perceptual system produces a state (your perceptual experience) that carries the information that the letters are arranged a certain way. And since the perceptual state is also a representational state, it "presents" the letters as arranged that way. Your system has extracted information, information that it now carries and presents to you. You then in turn form a belief about the world based on

---

[6] The brain-in-a-vat case clearly illustrates the difference. Suppose the world where I am a massively deceived disembodied brain-in-a-vat is a far away, remote possibility. Then the nearest possible world where I am a brain-in-a-vat is far away from the actual world. My belief that I am not a brain-in-a-vat turns out not to be sensitive, for in the nearest possible world where my belief is false, I still believe it. But my belief that I am not a brain-in-a-vat is safe, for in all nearby worlds where I believe it, it's true.

[7] In previous work I, like many others, failed to notice this ambiguity. As a result, many wrongly assimilate Dretske's view on knowledge to Nozick's sensitivity theory. When I first caught on to the possibility that Dretske's view might be a safety view, I went too far in the opposite direction and wrongly supposed it was a safety theory, and not an ambiguous one. See my (2005). I now see that Dretske's view is simply ambiguous.

this experience. Your belief is based on an information carrying signal that presents the information carried to you.

Let's call your belief information-based. An information-based belief that P is a belief based on (caused or sustained by) an internal, perceptual or cognitive state that carries the information that P, that causes or sustains the subject's belief that P in virtue of carrying the information that P. In safety talk, an information-based belief is a belief based on an internal perceptual or cognitive state that is safe vis-à-vis P, which causes the belief in virtue of the property in virtue of which the state is safe.

2.2 Knowledge as Information-Based Belief

The notion of information carrying gets used in the information-theoretic account of knowledge. Don't you know things about the page before you because of how your perceptual system picks up information about the page? On the information-theoretic account of knowledge, knowledge that P is belief based on the information that P.

The view of knowledge as information-based belief is very attractive (Dretske 1981; 2004). It falls within the class of subjunctive conditional accounts of knowledge, a class that includes the sensitivity views of Nozick (1981) and Goldman (1976; 1986) and the safety views of Sosa (1999) and Pritchard (2005) (and other "relevant alternatives" theories of knowledge). As I've presented it here, it's a version of the safety theory. The safety theory provides persuasive resolutions of Gettier and post-Gettier cases. For example, in the familiar case of the barns, it would look to the subject as if there were a barn before him in nearby worlds where there is no barn; his perceptual representation that there is a barn before him (even when there is) doesn't carry the information that there is a barn before him. That's why he doesn't know it's a barn. And it provides such a resolution without denying epistemic closure (Pritchard, 2005; Sosa, 2006). The information-theoretic account is also consistent with broadly externalist intuitions about the existence of knowledge in higher non-human animals and small children. Rival "defeasibility" and "no essential false belief" analyses of knowledge have problems with both Gettier cases and accounting for knowledge in

animals and small children.[8] For these reasons, among others, I shall assume the view is correct.

2.3 Testimonial Knowledge as Information Transmission

Given the information-theoretic account of knowledge, we can explain testimonial knowledge.[9]

Take a simple case where a subject perceives some fact and then reports his observation to another. Phillip sees that the door is open, and then tells Susan that the door is open. Phillip learns by perception that the door is open, and then passes this knowledge on to Susan. Perception generates knowledge. Testimony passes it on.

Why did Phillip learn that the door was open in the first place? On the information-theoretic view of knowledge, Phillip learned that the door was open because his perceptual state as of the door's being open carried the information that the door was open, and caused his belief in virtue of carrying that information. Phillip acquired knowledge because his perceptual system was able to extract information about his environment.

Phillip learns because he extracts information from the world; his perceptual belief is based on the information that the door is open. And then Susan learns from his testimony. But for Susan to learn from Phillip, her belief that the door is open must be information-based too. It must be based on an internal cognitive state that carries the information that the door is open. The information that Phillip has extracted must get to Susan. How does that happen?

Information flows. One signal, event or state of affairs can carry the information that P, and in virtue of the right kind of connection between that signal and another, the second signal can carry the information that P. Just as long as the right dependencies obtain so as to ensure that the subjunctives are true, a series of signals can all carry the same piece of

---

[8] See Feldman (2003) and Klein (2007).

[9] Lackey develops an account of testimonial knowledge in some respects similar to the one I shall sketch here (Lackey 2007; 2008). There are also other accounts that emphasize the moral psychology of communication, e.g. Richard Moran (2006) and Paul Faulkner (2007). Space does not allow me the opportunity to discuss these views here.

information; information can flow across the chain of signals. The information Phillip extracts flows from his perceptual state to his belief, from his belief to his assertion, from his assertion to Susan's state of comprehending his assertion, and from there to her belief that the door is open. The information Phillip extracted via perception gets transmitted to Susan via testimony.

I'll walk through the case again, this time making the subjunctive dependencies more explicit. (1) Phillip's perceptual system (in these very circumstances) would not present the door as open unless it is; his perceptual state carries the information that the door is open. (2) Phillip would not believe (in these very circumstances) that the door is open unless his perceptual state presented it as open, and so he would not believe (in these very circumstances) that the door is open unless it were; his belief carries the information that the door is open. (3) Phillip would not say to Susan (in these very circumstances) that the door is open unless he believed it is open. Hence he would not say that it is open unless it is. His testimony to Susan carries the information that the door is open. (4) Susan would not (in these very circumstances) take Phillip to say (would not comprehend his utterance) that the door is open unless he said it is open. Her taking him to say that it is open carries the information that it is open. (5) Susan's taking Phillip to say that it is open causes her to believe that it is open, and does so in virtue of the property of her taking him to say so in virtue of which it carries the information that the door is open. Her belief is an information-based belief. Hence Susan learns, from Phillip's say-so, that the door is open, and she learns it (in part) because Phillip knows that the door is open. She learns from him *because* he *extracted* information from the environment, and through communication *transmitted* it to her.

2.4 Extraction and Transmission

On the information-theoretic view, so-called "generative" sources like perception really do differ from so-called "preservative" sources like testimony. Perception extracts information from the world. Perception is a mechanism that is sensitive to differing states of affairs in the subject's environment. Light bounces off objects and stimulates our eyes. Sound waves affect our ears. Perception extracts information because of lawful connections in situ between external objects and our perceptual systems.

It's a first-hand way of reacting to the world in information-carrying ways. Testimony, on the other hand, conveys or transmits information that a speaker has already extracted via perception (or by some other first-person means). Testimony transmits information because of lawful connections in situ between what people say and information they have extracted in some other fashion. Perception is intuitively an information extractor; perception discovers information. Testimony is intuitively an information transmitter; testimony disseminates information. The orthodox view sees this difference in terms of generation and preservation. Perception generates knowledge; testimony preserves it. But at one level down, as it were, the real difference is between information extraction and transmission.

Cases favorable to the orthodox view are cases like Phillip and Susan's. Someone extracts information, forms a belief based on that information, and so comes to know that such and such is the case. They then go on to assert that such and such. If they would only assert it because they believe it, then their assertion carries the information they have extracted first-hand. If the hearer comprehends the assertion, the hearer then picks up the information that the speaker is transmitting. When the hearer forms her belief on the basis of that information, the hearer comes to know what the speaker already knows. If the speaker lacks the information that P, but asserts P anyways, the hearer isn't apt to learn that P, for the information that P won't be transmitted. Hearers learn from speakers that know, for hearers get what they need for knowledge that P (the information that P) from speakers who have it. And hearers don't learn that P from speakers who don't know that P, for the speaker doesn't have the information that P to transmit.

What the orthodox view is really on to is the fact that communication transmits information, and information is what we need to know. Usually we get the information we need to know from testimony if and only if our interlocutors have the information themselves. And if they have the information themselves, then usually they have knowledge too. That is why testimony, for the most part, but not necessarily, preserves, and doesn't generate, knowledge.

3. The Schoolteacher Cases Explained

With our theory of testimonial knowledge as information transmitted in hand, and with a case favorable to the orthodox view explained in terms of our theory, I now turn to the two cases that began our discussion: Mrs. Smith and Mr. Jones. The first shows that gaps of knowledge are possible in a chain that "possesses" knowledge, and the second shows that testimony can indeed generate knowledge. Using the theory, I'll explain what's going on in each case.

3.1 Why Gaps in the Chain of Communication are Possible

In the case of Mrs. Smith, her students get the information they need in order to know. Mrs. Smith's lessons are information-carrying signals; she would not say various things about evolution unless what she said was true. The children understand her lessons, pick up the information she is transmitting, and form beliefs in evolution on that basis. That is why they learn from her.

We also assume that the sources Mrs. Smith relies upon know all about evolution, and know it in first-hand ways. On the basis of observation, experiment, and reasoning, they extract information supporting evolution, and then in turn form beliefs based on that information. Their beliefs in evolution are information-based; they know the facts of evolution.

When Mrs. Smith reads their books and takes notes, she is receiving the information their assertions are transmitting. She comprehends their assertions; her comprehension-states carry the information about evolution that the authors she has reading have extracted first-hand. She is in the position to form information-based beliefs about evolution; she's in the position to learn (come to know) the truths of evolution herself.

But she can't bring herself to believe the theory. All she can bring herself to do is "accept" the theory for practical purposes. Instead of forming the propositional attitude *belief* based on the information she has picked up, she forms the propositional attitude "acceptance" based on the information she has received. Since she doesn't believe the theory, she doesn't know it.

Nevertheless her state of acceptance plays an analogous role in explaining why she can transmit the information on to her students. She tells them what she does because she "accepts" the theory, and her state of acceptance, like the state of belief she would have had if she were not a devout creationist, carries the information she has received from reading the evolutionists who have extracted the information first-hand. Just as beliefs carry information, information that can be transmitted through testimony, so too acceptances carry information, information that can be transmitted through testimony.

So in Lackey's case information gets extracted first-hand. The scientists extract it and form beliefs based on it. They learn the facts. They then transmit the information through their books. Mrs. Smith receives it and then transmits it to her students. The students form beliefs based on the information they receive; they learn (come to know) evolution. But Mrs. Smith doesn't know it, for she doesn't base a belief on it.

But for all that, knowledge isn't generated by testimony in this case. For even though there is a "gap" in the chain, knowledge of the facts of evolution was generated by the scientist's reliance on perception, experimentation, and reasoning. Testimony didn't "generate" knowledge in the theory; testimony simply passed the knowledge along.

3.2 Why Testimony Can Generate Knowledge

Once we see what is really going on beneath the surface in Lackey's case, it's easy to see what is going on in the case of Mr. Jones, and why in that case testimony generates knowledge.

Mr. Jones is a lot like Mrs. Smith. Like Mrs. Smith, Mr. Jones accepts the theory of evolution. In a loose sense, he "knows" it inside and out. And, like Mrs. Smith, he wouldn't "know" any of this if it were not for the first-hand efforts of Darwin, Dawkins, Gould, and all the rest. Mr. Jones didn't come up with the theory; he just picks it up from careful reading. Mr. Jones passes some of what he accepts on to his students as well. They come to know some of it for the same reason the students of Mrs. Smith do.

But the case of Mr. Jones is importantly different. Mr. Jones, relying on his grasp of evolutionary theory, and his perceptual experience of seeing a fossil, extracts information about the world, information no-one else

has ever extracted: an extinct creature once lived here. He accepts, but does not believe, this result. Though his state of accepting the result is based on the information that the creature once lived there (he would not accept it unless it were true), he doesn't believe it. Hence he does not know. Information has been extracted, but so far knowledge in the finding has not been generated. Since knowledge requires belief, no-one yet knows the fact just discovered.

Because his state of acceptance (like the belief he would have formed were he not a devout creationist) carries the information that the creature once lived here, he is able to transmit the information through testimony, information that he has extracted through perception. Because he would not tell them the creature lived there unless he accepted that it did, his assertion carries the information that the creature lived there. He tells his students and they believe him. They form information based beliefs; they learn (come to know) that a creature, long extinct, once lived here. They now know what Mr. Jones only accepts, something that no-one has known before. They are the first to know. Though testimony didn't *extract* any information, testimony *generated* knowledge.

The difference between Mrs. Smith and Mr. Jones is that Mrs. Smith is just transmitting information without belief; she doesn't extract any information herself. Mr. Jones, on the other hand, transmits information that he's extracted on his own. He uses perception, along with his grasp of evolutionary theory, to extract information that hadn't been extracted before. He then accepts the result. His state of acceptance in turn carries the information that the children in turn pick up, information that explains why they learn from him. Mr. Jones is an information extractor; Mrs. Smith is not.

What the orthodox view is really on to is the fact that communication transmits information, and information is what we need to know. Usually we get the information we need to know from testimony if and only if our interlocutors have the information themselves. And if they have the information themselves, then usually they have knowledge too. That is why testimony, for the most part, but not necessarily, preserves, and doesn't generate, knowledge. But sometimes our interlocutors, though they have the information required for knowledge, don't base a belief on that information, and so don't know what they enable others to know. At bottom, testimonial knowledge turns on the flow of information through communication.

Knowledge need not show up in every link in the chain of communication, nor in any prior link at all. Once we see what is really going on beneath the surface when someone acquires knowledge through testimony, we can see why testimony sometimes generates knowledge.

4. Conclusion

Heresy can shock the sensible. Saying that testimony can generate knowledge certainly surprises. And the surprise is entirely reasonable. Since testimony, unlike perception or introspection, isn't a "lens" or "direct mode of access" onto reality, how could it "generate", "discover", "produce", or "create" knowledge of something that was never known before? To deny the orthodox view seems to imply that testimony works *just like* perception, introspection, and reason. And that really does look absurd.

But once we see what's going on beneath the surface when someone acquires knowledge by testimony – testimonial knowledge is information-based belief – the claim that testimony can generate knowledge shouldn't be shocking at all. Information flows; information can be passed from link to link. If knowledge from testimony involves information transmission, we can see why testimony might generate knowledge. All we need is a case where (1) information gets extracted, but (2) no belief is based on the information, but (3) the information gets passed on via testimony, and (4) the recipients base a belief on the information received. Knowledge is then generated by testimony. Mr. Jones is a case just like that. Once we understand how knowledge works, we shouldn't be surprised that testimony can generate knowledge.

And none of this implies that testimony works *just like* perception. Unlike perception, testimony doesn't extract information. Testimony transmits information extracted by some other means. Orthodoxy is right that there's a difference; it's just wrong about what the difference is.

A good analogy for testimonial knowledge involves picking up colds from other people. We now know that colds are caused by viruses. When someone has a cold, copies of the virus end up in their saliva. When they cough or shake your hand, a copy of the viruses may get on your hand, and when you touch your face or mouth, the virus may get into your system too, and cause you to get sick too. Shaking hands with

someone who has a cold, or being around someone with a cold who is coughing freely, is a good way to pick up a cold oneself.

Once we see that it's the virus that causes the cold, that viruses copy themselves and get passed around, and further that not everyone who carries a virus has to get sick themselves, we can conceive three possibilities. First, you can pick up a cold from someone who has one by shaking hands. This resembles getting knowledge from someone who has it through testimony. Second, you can pick up a cold from someone who is just a carrier of the virus but not sick themselves. This could be because they picked up the virus from a previous person who had a cold. This would resemble getting knowledge from someone who does not possess it themselves, but still they are passing on knowledge from a previous person. Mrs. Smith is like this. Or, thirdly, it could be that you picked up the cold from someone who is a carrier, who isn't sick, but is the first one to pick up the virus. This would resemble getting knowledge from someone who does not possess it themselves, but extracted the information one needs to know. Mr. Jones is like this.

Testimonial knowledge is not, of course, just like getting a cold. But just as the viral theory advanced our understanding of how colds are acquired, so too the information-theoretic view of knowledge, and the fact that information can flow, advances our understanding of testimonial knowledge. It explains what goes on in the ordinary case; it explains what goes on in cases where there are gaps in the chain; and it explains what goes on in cases where testimony does, in fact, generate knowledge. Though the claim that testimony can generate knowledge may seem surprising at first, once we grasp the mechanics of testimonial knowledge, it shouldn't seem surprising at all.

University of California - Riverside
Email: Peterg@ucr.edu

REFERENCES

Audi, R. (2006). "Testimony, Credulity, and Veracity" in: J. Lackey & E. Sosa, eds., *The Epistemology of Testimony*, Oxford University Press, Oxford.

Bratman, M. (1992). "Practical Reasoning and Acceptance in a Context", *Mind* 101, pp. 1–15.

Burge, T. (1993). "Content Preservation", *The Philosophical Review* 102, pp. 457–488.

Dretske, F. (1971). "Conclusive Reasons", *Australasian Journal of Philosophy* 49, pp. 1–22.

Dretske, F. (1981). *Knowledge and the Flow of Information*, The MIT Press, Cambridge, Mass.

Dretske, F. (2004). "What Perception Teaches" in: S. Luper, ed., *The Skeptics: New Essays*, Ashgate, Aldershot.

Dummett, M. (1993). "Testimony and Memory" in *The Seas of Language*, Oxford University Press, Oxford.

Faulkner, P. (2000). "The Social Character of Testimonial Knowledge", *Journal of Philosophy* 97(11), pp. 581–601 .

Faulkner, P. (2007). "Telling and Trusting", *Mind* 116(464), pp. 875–902 .

Feldman, R. (2003). *Epistemology*, Prentice-Hall, New Jersey.

Goldman, A. (1976). "Discrimination and Perceptual Knowledge", *Journal of Philosophy* 73, pp. 771–791.

Graham, P. (2000a). "Conveying Information", *Synthese* 123, pp. 365–392.

Graham, P. (2000b). "Transferring Knowledge", *Noûs* 34, pp. 131–152

Graham, P. (2005). Review of Lars Bo Gunderson, *Dispositional Theories of Knowledge: A Defense of Aetiological Foundationalism* in: *Sats: Nordic Journal of Philosophy* 6(1), pp. 143–49.

Kim, J. & E. Sosa, eds. (2008). *Epistemology: An Anthology*, Blackwell, Oxford.

Klein, P. (2007). "Useful Falsehoods" in: Q. Skinner, ed., *Epistemology: New Essays*, Oxford University Press, Oxford.

Lackey, J. (1999). "Testimonial Knowledge and Transmission", *The Philosophical Quarterly* 49, pp. 471–90.

Lackey, J. (2005). "Memory as a Generative Epistemic Source", *Philosophy and Phenomenological Research* 70, pp. 636–58.

Lackey, J. (2007). "Learning from Words", *Philosophy and Phenomenological Research* 73, pp. 77–101.

Lackey, J. (2008). *Learning from Words*, Oxford University Press, Oxford.

Moran, R. (2006). "Getting Told and Being Believed" in: J. Lackey & E. Sosa, eds., *The Epistemology of Testimony*, Oxford University Press, Oxford.

Nozick, R. (1981). *Philosophical Explanations*, Harvard University Press, Cambridge, Mass.

Pritchard, D. H. (2005). *Epistemic Luck*. Oxford University Press, Oxford.

Sosa, E. (1999). "How to Defeat Opposition to Moore", *Philosophical Perspectives* 13, pp. 141–53.

Sosa, E. (2006). 'Replies' in J. Greco, ed., *Ernest Sosa and His Critics*, Blackwell, Oxford.