Resilient Understanding:
The Value of Seeing for Oneself

The primary aim of this paper is to argue that the value of understanding derives in part from a kind of subjective stability of belief that we call *epistemic resilience*. We think that this feature of understanding has been overlooked by recent work, and we think it's especially important to the value of understanding for social cognitive agents such as us. We approach the concept of epistemic resilience via the idea of the experience of epistemic ownership and argue that the former concept has Platonic pedigree. Contrary to longstanding exegetical tradition, we think that Plato solves the "Meno problem" with an appeal to the epistemic resilience characteristic of understanding, not the well-groundedness characteristic of canonical cases of propositional knowledge. Finally, we apply our discussion to the case of science outreach and the challenge of global warming skepticism and conclude with directions for future research.

1. Understanding *Understanding* and its Importance

In a democratic, industrialized society, a scientifically-literate public is critical to the possibility of good policy-making. Distressingly, however, science outreach efforts have failed to generate a level of public consensus sufficient to inform rational action on some very important public issues. Global warming (AGW) is a prime example. Why does denialism work, and how is it best counteracted? Surprisingly, this sort of question has received relatively little attention from philosophers. We believe that there are interesting and important philosophical questions here, and that this is a case where applied epistemology might do some real good. In this paper, we argue — following Plato! — that reflection on the value of understanding (as opposed to knowledge) might improve outcomes in science outreach.

There are two main threads to recent philosophical work on understanding. First, there's the question of the nature of understanding; in particular, the question of the relationship between understanding and knowledge. Is understanding merely a species of knowledge or is it something different and distinctive? Second, there's the question of the value of understanding, often introduced as an alternative approach to the so-called "Meno problem" of explaining why knowledge

is more valuable than true belief. The idea is that, even if knowledge isn't distinctively valuable as compared with true belief, understanding *is*.

On the first question, we're agnostic. We're not especially moved by arguments based on Gettier- and fake-barn-style intuitions (cf. Kvanvig 2003; Pritchard 2014), and we're not convinced (yet) that there is no good sense in which understanding, like knowledge, is factive (cf. Elgin 2009). But however these questions are settled, we think understanding is worthy of special philosophical attention because it has important features that distinguish it from canonical cases of propositional knowledge. Here are three that we find especially salient and important:

First, understanding is *holistic*, while canonical cases of propositional knowledge are *atomistic*. One might know *that* the sky is blue but fail to understand *why* it is blue. Notice that in shifting from 'that' to 'why' we shift from one proposition to (presumably) a whole slew of them. Understanding *that* that sky is blue, in most usages, can be treated as a near synonym of *knowing* that it is.[1]

Second, unlike canonical cases of propositional knowledge, understanding *can't be acquired by testimony alone*. This is not, of course, to say that testimony is not *necessary* for understanding or that it cannot, relatively directly, *produce* or *lead to* understanding. Rather, we think that understanding requires a degree of cognitive involvement that makes inappropriate notions of *transferring* understanding (as we might transmit knowledge).

Third, understanding typically engenders a certain *flexible responsiveness*; it is something that you can apply in novel ways as circumstances require. Canonical cases of propositional knowledge are

[1] In some cases, it seems that 'understand' and cognates conveys a certain kind of "distancing", as when I might say 'I understand that you are upset with me', knowing full well that you in fact are but hoping that my tentativeness might prove means of diffusion.

comparatively rigid. Thus, while an inability to handle new cases is likely to raise doubts about someone's understanding, it can leave corresponding claims to knowledge unthreatened.

This view of understanding is not especially controversial, and each of these features helps to explain the widespread intuition that understanding is more valuable than mere knowledge. How so? Let us again attend to our distinctions:

First, because understanding is holistic, it is *deep*. Someone who understands doesn't merely appreciate the facts, she *sees* how they hang together.

Second, understanding can't be acquired by testimony alone because someone who understands doesn't merely appreciate a set of related facts, she *makes* connections between them and sees *for herself* how they hang together. In this respect, understanding constitutes a robust cognitive achievement.

Third, the flexible responsiveness characteristic of understanding has obvious *practical value*. When it comes to, say, heart surgeons or mountain guides, you should prefer those who really understand their métier, and so, can respond capably to the unexpected.

The primary aim of this paper is to argue that understanding has a further *ceteris paribus* good-making feature — namely, a kind of subjective stability that we call *epistemic resilience*. We think that this is a feature of understanding that has been overlooked by recent work, and we think it's especially important to the value of understanding for social cognitive agents such as us. In the next section, we introduce the concept of epistemic resilience via the idea of the experience of epistemic ownership.

2. Epistemic Resilience

As noted above, someone who understands doesn't merely appreciate a set of related facts, she *makes* connections between them. To use a common metaphor, she *sees for herself* how they hang together. We think this metaphor is apt, and we think there's a lesson to be learned about understanding from attention to seeing literally so-called.

Seeing is, of course, not believing. For one thing, we know a great deal by testimony alone. Nevertheless, there is something to be said for seeing things for yourself. Consider:

Case 1. You know a bittern when you see one, and you saw one in the garden.

Case 2. You are told by your friend Austin, who knows bitterns on sight, that he saw a bittern in the garden.

In both cases, you seem to have the same level of epistemic justification for the belief that there is a bittern in the garden. Seeing it for yourself is no better justification than hearing it from Austin, who saw it for both of you.[2] Still, it would be a mistake to conclude that seeing the bittern for yourself offers no distinctive epistemic benefit. For instance, suppose that A.J.'s overweening skepticism leads him to entertain doubts about the bittern. He asks, "How can you be sure it wasn't a grey egret?" Arguably, all things equal, if you know thanks only to Austin's testimony, then you are more vulnerable to A.J.'s challenge than if you have seen the bittern for yourself. In particular, we think that (again, ceteris paribus) seeing it for yourself yields a higher degree of epistemic resilience than merely hearing about it from Austin — in two senses. First, seeing it for yourself yields greater *de facto* resilience: having seen it for yourself, you *will in fact* be relatively less inclined to give up the

[2] In fact, if Austin really knows his birds, a belief acquired from him might be better justified than anything you might acquire on your own.

belief that there is a bittern in the garden. Second, seeing it for yourself yields greater *de jure* resilience: having seen it for yourself, you *ought* to be relatively less inclined to give up the belief that there is a bittern in the garden. But why think this? Whence resilience?

In Case 2, you depend on Austin getting it right, but you don't *experience* him getting it right. On the other hand, in Case 1, *you have a direct experience of getting it right yourself*; in particular, you experience your belief as grounded in an act of perceptual recognition. This corresponds to the fact that in Case 1 you have a richer experience of your belief as a cognitive achievement. In other words, you have a richer experience of your belief as a result of good — or virtuous — cognitive conduct. If virtuous cognitive conduct is by nature truth-conducive, then, in seeing the bittern for yourself, you have a richer experience of the truth-conduciveness of the process by which your belief came to be. Again, however, this does not mean that the belief in Case 1 is better justified. On the other hand, Case 1 does involve an experience of *epistemic ownership* that we think should — and generally will — make the belief more epistemically resilient in the face of certain kinds of skeptical challenges.

But why, exactly, should we think that an experience of epistemic ownership yields *de jure* resilience? In other words, even if it's plausible to think that states over which we experience epistemic ownership *will in fact* be more epistemically resilient (a matter for empirical study), why should we think that they *ought* to be so? Arguably, giving up cognitive states over which we experience epistemic ownership comes at a greater cost to "psychic harmony." And on the plausible assumption that maintaining psychic harmony is rationally desirable, reason requires that, in general, states over which we experience epistemic ownership should be relatively more epistemically resilient.[3] If we're right, then beliefs that do not depend on testimony — as in literally seeing

[3] On rationality and psychic harmony, see Zagzebski (2012).

something for yourself — should, and generally will, be more resilient than beliefs that do depend on testimony.

The idea that *literally* seeing for yourself engenders epistemic resilience in virtue an experience of epistemic ownership plausibly extends to the case of understanding as *figurative* seeing for yourself. Suppose that you come to know a set of related propositions solely on the basis of expert testimony; transforming such knowledge into something deserving the name of understanding requires doing the work of "seeing for yourself" how those propositions hang together. *Coming to understand* thus involves a relatively robust cognitive achievement, and so, yields a relatively robust experience of epistemic ownership. This suggests that beliefs comprising understanding should, and generally will, be more epistemically resilient than mere knowledge based on testimony.

The experience of epistemic ownership is, we think, an important and generally neglected phenomenon. We think it's critical to explaining why seeing for yourself (whether literal or figurative) is especially cognitively satisfying. However, we don't think it's the only source of understanding's epistemic resilience. For one thing, as mentioned above, someone who understands possesses a kind of *flexible responsiveness* — an ability to handle novel situations and challenges — that makes relevant beliefs more epistemically resilient. Other plausible sources of epistemic resilience include: (a) the degree of a belief's entrenchment in your "web of belief" (more deeply entrenched beliefs should — and typically will — be more difficult to give up); and (b) the pleasures of cognitive achievement, whether in perceptual recognition or in the "Aha" moment of understanding (it's plausible that more pleasurable cognitive states will typically be more difficult to give up, regardless of whether they ought to be) (Gopnik 2000; Trout 2002).

Next, we argue that the concept of epistemic resilience has Platonic pedigree. Contrary to long-standing exegetical tradition, we think that Plato solves the "Meno problem" with an appeal to the epistemic resilience characteristic of understanding, not the well-groundedness characteristic of canonical cases of propositional knowledge.

3. Will the Real "Meno Problem" Please Stand up?

Let us take a step back. In the literature on epistemic value, the "Meno Problem" or "Meno Question" refers to the question of what, if anything, makes knowledge more valuable than true belief. This appellation has its origin in a reading of a passage in Plato's *Meno* (96e–98a) in which Socrates and Meno discuss what makes *episteme* — usually translated 'knowledge' — more valuable than *doxa alethes* — usually translated 'true belief'. Socrates claims that the value of *episteme* is explained by the fact that it is *doxa alethes* supplemented with a *logos* — that is, with *an account* — and this has typically been taken to mean that Plato endorses something like a JTB account of knowledge. However, following Gail Fine, Julius Moravcsik, Linda Zagzebski, and others, we think that *episteme* is more correctly translated by 'understanding' and that Plato had little interest in the notions of entitlement or justification that so animate contemporary epistemology.[4] The question is then what to make of the *real* Meno Problem.

We think it's clear that, in some cases, what *we* think of as instances of knowledge *Plato* treats as mere true *doxai*. Consider that, at the end of the famous conversation with the slave boy, Socrates describes him as having true *doxa*, but not *episteme*. However, on any plausible contemporary account, the slave boy *knows* the relevant geometrical proposition, even if he can't repeat the proof himself, and even if we want to say that he knows it only on the basis of Socrates's say-so. His true

[4] See Zagzebski's (2009) discussion of the *Meno*, including excerpts from the work of Fine and Moravcsik on pp. 143ff.

belief is very well justified — he's thoroughly entitled to it — but that doesn't get him *episteme*. For *episteme* he needs a *logos*. The real Meno Problem is why we should care about getting a *logos* if, like the slave boy, we already have knowledge (cf. Kvanvig 2003).

The answer comes in the famous passage at 97e–98a that compares mere true *doxa* to statues of Daedalus:

> To acquire an untied work of Daedalus is not worth much, like acquiring a runaway slave, for it does not remain, but it is worth much if tied down, for his works are very beautiful. What am I thinking of when I say this? *True doxai*. For *true doxai*, as long as they remain, are a fine thing and all they do is good, but they are not willing to remain long, and they escape from a man's mind, so that they are not worth much until one ties them down by [giving] an account of the reason why…. After they are tied down, in the first place they become *episteme*, and then they stay in place. That is why *episteme* is prized higher than correct *doxa*, and *episteme* differs from correct *doxa* in being tied down. (Grube translation, modified)

Socrates thinks that, in some sense, true or correct *doxai* are *unstable*. But why? Is it just a psychological fact about humans that, in us, such states are unstable, even when — as in the case of the slave boy — they amount to knowledge? In what sense are true *doxai* "not willing to remain long" and liable to "escape from [your] mind?" Why do they need to be "tied down" with a *logos*? The slave boy has testimonially-grounded knowledge of geometry — why should we be worried he might lose it? The answer, we think, comes in the form of the specter of sophistry that haunts the

Meno from its very beginning — from the introduction of the question whether virtue can be taught.[5]

It has been remarked by Zagzebski (2009), among others, that ancient philosophers were not much concerned with skepticism. This is supposed to explain their lack of interest in certainty as an epistemic goal. In one sense, this is clearly correct, but it also overstates the case. Even though the solopsistic reflections of Cartesian philosophy are entirely absent from the dialogues, Plato *is* concerned with a kind of skeptical threat. What alarms him is the significance of a kind of *socially-driven skepticism* that results from the existence of a wide variety of conflicting and apparently expert opinions on matters of critical import.

The sophists played a direct role in fostering this kind of social-epistemic instability. On the one hand, many sophists claimed to be teachers of virtue and had a reputation for making this claim (91a–95b). On the other hand, Meno says of Gorgias, the "most honest" of sophists, that "you would never hear him promising this. Indeed, he ridicules the others when he hears them making this claim. He thinks one should make people clever speakers" (95c). The result is a proliferation of "clever speakers" who, like Meno, are willing to make "many speeches about virtue before large audiences on a thousand occasions," speeches they may think are "very good" (80b).

In Plato's view, this creates a serious problem for the project of becoming virtuous. The Athenian finds himself surrounded by a multiplicity of supposedly expert voices on virtue. Thus, even if he's lucky enough to acquire justified true *doxai* about virtue after exposure to a speech by a genuine expert — as the slave boy does about geometry thanks to his conversation with Socrates — it remains that, inasmuch as he lacks a *logos* for those *doxai*, they, like those of the slave boy, will only

[5] As indicated by the discussion from 91a–95b, many sophists at least *claim* to be teachers of virtue *and* have a reputation for making this claim. Thus, by raising the question of the teachability of virtue in its opening sentence (70a), the *Meno* implicitly begins by questioning the claims of sophistry.

have "been stirred up like a dream" (85c), which suggests that they might be easily dispersed by conflicting testimony from other would-be experts. *This*, we think, is the sense in which mere true *doxai* are "not willing to remain long" and liable to "escape from [your] mind": they are unable to withstand the sorts of sophistic challenges rife in Athenian social and political culture. Moreover, if *stably* true *doxai* about virtue are — as Plato believes — essential to flourishing, it will be nigh impossible to live virtuously with mere true *doxai* in an environment such as ancient Athens. To succeed nevertheless will be to "possess [virtue] as a gift from the gods which is not accompanied by understanding" (99e–100a).

On this view, the relative value of *episteme* vis-à-vis *doxa alethes* lies in its epistemic resilience: it is not so easily dislodged by sophistic challenges. As Socrates notes, when it comes simply to guiding action, true *doxa* gained from expert testimony is just as good as *episteme* (97b–c); but once we factor in a social setting in which expertise in contested by a culture of sophistry, mere true *doxa* appears dangerously unstable. But this, of course, is precisely the sort of social setting we inhabit, *especially* in the domain of science literacy.

4. Denialism and Epistemic Resilience

Let us consider an example of contemporary sophistry where epistemic resilience comes into play. Suppose that Doug knows via testimony that Anthropogenic Global Warming (AGW) is happening and that human emission of CO_2 is largely to blame. But he doesn't know what about CO_2 is causing the warming or how scientists even know this is the case. His belief is shallow and passive. It

is also threatened in many contexts by frivolous denialist challenges.[6] On the way to work, he encounters the following billboard:

Figure 1

Later, a friend challenges him: "You really believe that global warming stuff?! Wake up, man — it's a conspiracy!" Since Doug is not in a good position to rebuff these challenges and he experiences minimal epistemic ownership over his merely testimonially-acquired belief, it is not very resilient — even in the face of the weakest of skeptical challenges — despite the fact that it is very well justified.[7]

[6] Alternatively, one could follow Torcello (2016) in thinking about the frivolity these challenges as instances of "pseudo-skepticism".

[7] One could catalogue in more detail the strategies of global warming "contrarians" and "denialists" and how they work, but the most common thread is familiar to epistemologists and illustrated by these examples: raise to salience a defeater that one cannot immediately rule out which conflicts with AGW. The aim is not to propose an alternative account of the

Suppose, on the other hand, that rather than merely taking scientists' or reporters' word for it, Doug comes to understand a bit more of how AGW works, for example by seeing the following image in a magazine (Fig. 2).[8] In doing so — even in seeing for himself how it *could* be true — Doug makes the knowledge his own. He sees how the story hangs together and experiences a greater degree of epistemic ownership over the facts. Even a little understanding may be effective on this count. Perhaps Doug reads the following analogy between greenhouse gases and insulation on a website concerning climate change: "More gas means more heat from the sun is trapped on the earth, theoretically raising its temperature. Basically, it's like adding more insulation to your home without lowering the amount of time you run your heater" (Sharkbytes 2014). Or perhaps he sees a diagram illustrating how the sun is only one driver of the global climate (e.g., Figure 2). Or perhaps he understands just a little about how the scientists contributing to the IPCC work. Even this rudimentary understanding on these subjects can enable enough flexible responsiveness to forestall many of the skeptical attacks one encounters in the media (Clark *et al.* 2013).

relevant data — their set of defeaters are not even consistent with each other — rather, their aim is to induce suspension of belief (or worse).

[8] Granted: a lot of "taking scientists' and popularizers' words for it" will also go on in the production of Doug's understanding, but there is an important difference, we think, between mirroring their beliefs and coming to a degree of understanding about a complex subject like climate change.

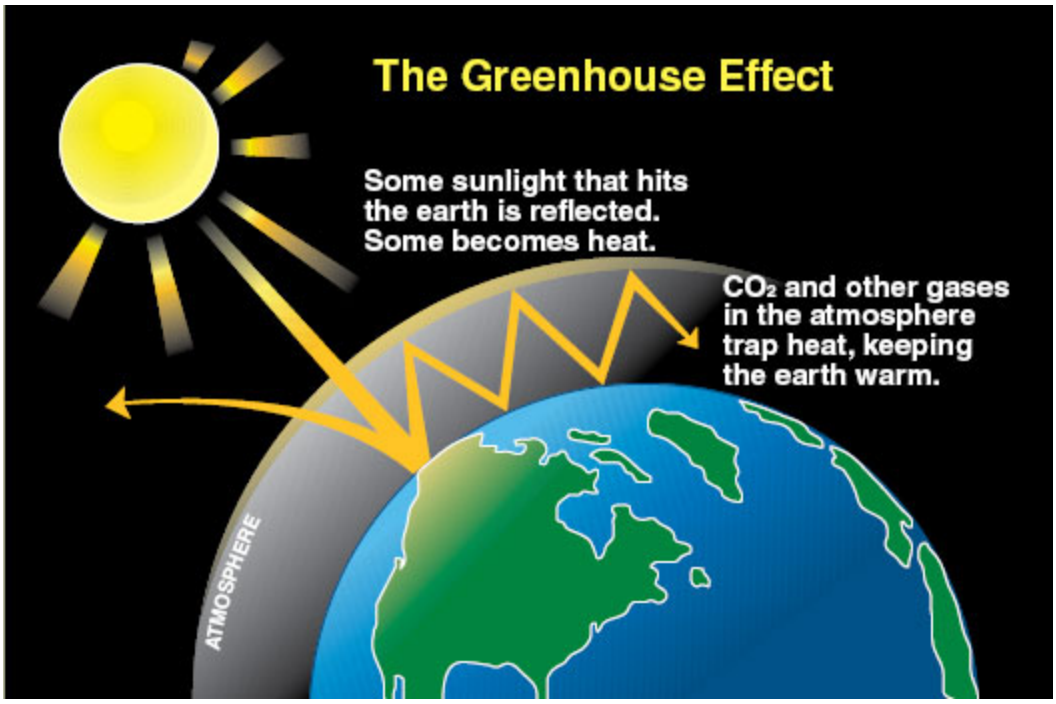

Figure 2

In so doing, Doug also develops a flexible responsiveness that enables him to think to himself in response to the message of the billboard: "Well sure, the sun is in a sense the main driver of climate, but that doesn't mean that increasing levels of CO_2 can't cause increasing temperatures any more than rolling the car windows up won't make the temperature go up inside." Arguably Doug need not be in a position to decisively respond to *any* given denialist challenge. He simply needs to be in a position to recognize how the challenges *might well* be frivolous. Such flexibility is also at work when the denialist challenges concern the *source* of genuinely authoritative claims about AGW.

Simply knowing that scientists are, by-and-large, trustworthy and competent is one thing; understanding why scientific consensus is a source of that trust is another; this is the secondary cognitive achievement mentioned above (Almassi 2012). Consider Doug versus the doubt-mongerer wielding the East Anglia "Climate-gate" emails. The suggestion here, let's suppose, is that emails

between a handful of climate scientists in the UK show that there is some nefarious data-manipulation going on and that AGW is a hoax perpetrated by the majority of the scientific community in order to either secure them funding or promote a particular political agenda (conspiracy theorists do not always demand perfect knowledge of motive, if means and opportunity are well enough in hand). In our original telling, Doug's knowledge is rather unreflective; he's trusted scientists before to apparently good effect, but hasn't really understood how science as a social institution works. Denialists have both attempted to suggest that there is no scientific consensus about AGW and argued that that consensus is irrelevant.[9] But now imagine that Doug comes to understand a bit more about how scientific results are produced, vetted, disseminated, and so on. He understands how various people come to do science, how competing communities of scientists form and interact in complex ways that make top-down control over the behavior of scientists extremely difficult. Seeing this (even some of it) puts Doug in a much better position to deflect the Climate-gate challenge. Even supposing that he does not know enough about scientific data-manipulation to conceive of innocent usage of purported chicanery-suggesting "smoking-gun" phrases, Doug might still see the case as probably isolated or overblown. Positing a vast conspiracy among disconnected investigators is quite implausible and Doug is effectively able to laugh off such nonsense or even explain why it is implausible.

The performative aspect of understanding — being able to deflect a range of frivolous skeptical challenges — is an obvious source of epistemic resilience in social contexts infected with motivated sophistry. But we claim that epistemic resilience is also produced by the experience of epistemic ownership one has in understanding something — in "seeing for oneself" how something works.

[9] A famous instance of the latter comes from novelist Michael Crichton and is often parroted embellished with cartoonish depictions of Galileo's eventual "vindication" against the benighted majority; see: http://www.crichton-official.com/speech-alienscauseglobalwarming.html.

This involves a *de jure*, normatively-significant, aspect of epistemic resilience that goes beyond the de facto resilience stemming from one's enjoying some command of a subject matter. Doug *ought* to be more resilient when he sees for himself how climate change works than when he merely takes scientists' words for it — and he will be.

5. Further Directions for Research

What lessons for science communication should we take away from the foregoing? A simple message might be: *rather than aiming to redress the deficit in the public's knowledge about important scientific matters by simply providing them with more facts, aim to produce in them a certain degree of understanding*. Does this mean that we should move away from consensus messaging? Should we, for instance, renounce messaging of the form "97.5% of climate scientists agree that climate change is occurring and is human caused"? This is not so clear. Recent research suggests that such messages can be effective (Myers *et al.* 2015; van der Linden *et al.* 2015). We hypothesize, however, that they would be more effective (and less prone to denialist undermining) when supplemented in ways that generate greater understanding of how consensus functions in the scientific establishment today.

We do not suggest that greater emphasis on understanding over knowledge in science communication is a panacea; it is, as they say, but a brick in the wall of a very complex issue. But it seems to us plausible that more attention and empirical study should focus not only on what is effective for bringing about certain beliefs in people, but in decreasing their tendency to "run away" on minimal prompting.

REFERENCES

Almassi, Ben (2012) "Climate Change, Epistemic Trust, and Expert Trustworthiness", *Ethics & the Environment* 17 (2):29–49.

Clark, Dav, Michael Andrew Ranney, and Jacqueline Felipe (2013) "Knowledge Helps: Mechanistic Information and Numeric Evidence as Cognitive Levers to Overcome Stasis and Build Public Consensus on Climate Change", in M. Knauff, M. Pauen, N. Sebanz and I. Wachsmuth (eds.), *Proceedings of 35th Annual Meeting of the Cognitive Science Society*. Austin: Cognitive Science Society.

Elgin, C. Z. (2009) "Is Understanding Factive", in A. Haddock, A. Millar and D. H. Pritchard (eds.), *Epistemic Value*. Oxford: Oxford University Press.

Gopnik, Alison (2000) "Explanation as Orgasm and the Drive for Causal Understanding: The Evolution, Function and Phenomenology of the Theory-Formation System", in F. Keil and R. Wilson (eds.), *Cognition and Explanation*. Cambridge, MA: MIT Press.

Kvanvig, Jonathan (2003) *The Value of Knowledge and the Pursuit of Understanding*. Cambridge: Cambridge University Press.

Myers, Teresa A., Edward W. Maibach, Ellen Peters, and Anthony A Leiserowitz (2015) "Simple Messages Help Set the Record Straight about Scientific Agreement on Human-Caused Climate Change: The REsults of Two Experiments", *PLoS ONE* (DOI:10.1371/journal.pone.0120985).

Pritchard, Duncan (2014) "Knowledge and Understanding", in A. Fairweather (ed.), *Virtue Epistemology Naturalized: Bridges Between Virtue Epistemology and Philosophy of Science*. Synthese Library 366: Springer International Publishing.

Sharkbytes (2014) "How Does Global Warming Work?", *Online Newsletter from NSU.* URL = <http://nsunews.nova.edu/global-warming-work/> (accessed 8/31/14).

Torcello, Lawrence (2016) "The Ethics of Belief, Cognition, and Climate Change Pseudoskepticism: Inplications for Public Discourse", *Topics in Cognitive Science* 8:19-48.

Trout, J.D. (2002) "Scientific Explanation and the Sense of Understanding", *Philosophy of Science* 69:212–233.

van der Linden, Sander L., Anthony A. Leiserowitz, Geoffrey D. Feinberg, and Edward W. Maibach (2015) "The Scientific Consensus on Climate Change as a Gateway Belief: Experimental Evidence", *PLOS One* 10 (2):e0118489.

Zagzebski, Linda T. (2009) *On Epistemology*. Belmont, CA: Wadesworth.

——— (2012) *Epistemic Authority: A Theory of Trust, Authority, and Autonomy in Belief*. Oxford: Oxford University Press.