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On the Epistemic Significance of Expert Conversion

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On the Epistemic Significance of Expert Conversion

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Philosophy

by

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Abstract

Much of our knowledge of the world depends on the testimony of experts. Experts sometimes change their minds and disagree with each other. What ought a novice do when an expert changes their mind? This dissertation provides an account of when expert conversion is epistemically significant and how the novice ought to rationally defer to expert conversion. In answering when expert conversion is epistemically significant, I provide a diagnostic tool that emphasizes that epistemically significant expert conversion seems to be evidence-based and that there is an absence of cognitive biases on the part of the converting expert. In answering how the novice ought to rationally defer to a converting expert I give two principles. First, I give a principle for determining when an expert is trustworthy. Second, I answer under what further conditions a novice rationally or legitimately trusts in a converting expert.

Dedication

I dedicate this dissertation to God, my wife Kadija, my family, and all the professors who have taught me so well. Most of all I dedicate this work to God.

TABLE OF CONTENTS

INTRODUCTION	1
CHAPTER 1: ON THE NATURE OF CONVERSION AND ITS EPISTEMIC SIGNIFICANCE	11
1 INTRODUCTION.....	11
2 THE STRUCTURE OF SCIENTIFIC REVOLUTIONS	11
3 AN ACCOUNT OF THE STRUCTURE OF CONVERSION	16
4 WHY IS CONVERSION EPISTEMICALLY SIGNIFICANT?	22
5 CONCLUSION.....	33
CHAPTER 2: ON THE NATURE AND SIGNIFICANCE OF EXPERTISE AND GOLDMAN’S NOVICE/2-EXPERT PROBLEM.....	35
1 ACCOUNTS OF EXPERTISE.....	35
2 WHY IS EXPERT TESTIMONY EPISTEMICALLY SIGNIFICANT?	46
3 A PROBLEM IN THE EPISTEMOLOGY OF EXPERTISE: GOLDMAN’S NOVICE/2-EXPERT PROBLEM.....	55
4 CONCLUSION.....	64
CHAPTER 3: ON THE EPISTEMIC SIGNIFICANCE OF EXPERT CONVERSION.....	65
1 INTRODUCTION.....	65
2 A CENTRAL QUESTION.....	66
3 WHEN SHOULD THE NOVICE TAKE THE CONVERSION OF AN EXPERT TO BE EPISTEMICALLY SIGNIFICANT?	69
4 DEFEATERS FOR EPISTEMICALLY SIGNIFICANT EXPERT CONVERSION	78
5 AN EXAMPLE OF EPISTEMICALLY SIGNIFICANT EXPERT CONVERSION	81
6 CASES OF EXPERT CONVERSION THAT ARE EPISTEMICALLY SIGNIFICANT	89
7 OBJECTIONS	91
8 CONCLUSION.....	97
CHAPTER 4: HOW SHOULD NOVICES RESPOND TO EXPERT CONVERSION	98
1 INTRODUCTION.....	98
2 THE SECOND QUESTION AND HOW IT RELATES TO THE CENTRAL QUESTION.....	98
3 WAYS THE NOVICE CAN GO WRONG WITH RESPECT TO EXPERT CONVERSION	100
4 LANE’S MODERATE VIEW CONCERNING EXPERT DISAGREEMENT	107

5 ZAGZEBSKI ON CONSCIENTIOUSNESS AND AN EPISTEMOLOGY OF TRUST	131
6 CONCLUSION.....	146
CONCLUSION	147
BIBLIOGRAPHY	150

Introduction

Much of our knowledge depends on what others tell us. From concerns about the climate to medical diagnoses, often, we take ourselves to know things beyond our expertise because we trust those who do have the expertise. Another uncontroversial fact about our epistemic situation is that people change their minds. For example, a conservative becomes a liberal, an atheist comes to believe in God, or a geocentrist becomes a heliocentrist.

This project investigates the intersection of these two epistemic phenomena: our dependency on the testimony of experts and the fact that people, including experts, change their minds. The project is generally exploratory but argues for a contested claim that sometimes when a person trusts an expert and that expert changes their mind, the person ought defer to the converting expert, even sometimes when the converting expert is going against the current consensus.

One reason why this project is important is because there has not been much discussion in the current literature in social epistemology concerning the role of expert *conversion*. There is a rich discussion of expert testimony in the literature and the nature and role of belief in a social context, but there has not been much exploration in the area of expert testimony and expert conversion. There are unique questions that arise at the intersection of expert testimony and expert conversion. Some of the questions that this project addresses are the following: What is the nature and significance of expert conversion in general? Are there ever instances of epistemically significant expert conversions and if so, under what conditions? Further, if there are instances of epistemically significant expert conversions and we can specify under what conditions they obtain, do novices, or people whose knowledge depends on the testimony of the expert, have any epistemic responsibilities with respect to the expert's conversion? If they do, what are those responsibilities? Additionally, do all expert conversion testimonies carry the same

epistemic weight or are some expert conversions more epistemically significant than others? Last, are epistemically significant expert conversions limited to a specific domain of knowledge? If they are, then why do some domains of knowledge permit epistemically significant expert conversions while other domains do not? Let us consider some of these questions in more detail and discuss how my project seeks to answer some of them.

What is the nature and significance of expert conversion in general?

Is there something special epistemically about expert conversion? Why focus on conversion? Isn't conversion just an instance of expert testimony that does not add any additional epistemic weight to the testimony of the expert? I do not think so. There are cases in which the fact that an expert converted provides more epistemic weight to the testimony of the expert over and above the testimony of an expert who has not converted. Something that is important to emphasize is that conversion *per se* is not sufficient to render greater epistemic weight to the expert's testimony, but, as we will see in this dissertation, under certain conditions, there are cases in which the fact that an expert has converted from one position to another provides additional epistemic weight to their testimony that they might not have had otherwise.¹

If I can demonstrate the claim that in some instances, expert conversion confers additional epistemic weight to the testimony of an individual that they may not have otherwise had would be an important piece of data in our epistemic theory. If expert conversion can be epistemically significant in ways that is over and above mere expert testimony, at least

¹ I am not claiming that expert conversion is the only way in which the epistemic weight of an expert's testimony might increase. Rather, I am merely making the claim that under certain conditions, the fact that an expert has converted adds an epistemic boost to the testimony of the expert that might not (although it could) have obtained.

sometimes, this is an important discovery that would need to be accounted for in any epistemology.

Under what conditions is expert testimony epistemically significant?

Answering this question is important for the following reason: reflecting on the possible conditions in which expert conversion is significant allows us to consider in a unique way the reasons why expert testimony in general is significant. The phenomenon of expert conversion and the conditions in which it obtains allows us to consider the ways in which testimony can be affected by bias and other non-rational factors. There is much discussion concerning the influence of non-rational factors and the way in which this effects our beliefs and even the beliefs of experts, but there is not much exploration in the area of the non-rational influences (or lack of non-rational influences) and the effect this has on the epistemic weight of a person's testimony in the context of a person changing one's mind. For example, there is plenty of discussion of how bias can influence whether an individual person or even a group of people can reason poorly or for non-rational reasons, but there is less discussion about the role bias plays in the epistemic lives of experts and the people who epistemically depend on them — especially at the intersection of expert testimony, bias, and expert conversion. For example, C. Thi Nguyen discusses the notion of cognitive islands and echo chambers, which are instances of expert testimony and bias, but not much is said concerning the role experts play, specifically when they change their minds, in regards to the knowledge of the novices who depend on them.² Take for example a real world case, physicist Richard Muller, a former climate change skeptic, who now believes that climate change is real, the rate of warming is accurate, and that humans are the

² See C. Thi Nguyen (2020), “Cognitive Islands and Runaway Echo Chambers: problems for epistemic dependence on experts,” *Synthese*, 197, 2803-2821.

primary cause.³ Here is a real world example of an expert changing their mind that is likely to be epistemically significant.

Another important feature about studying the epistemic significance of expert conversion is that it may shed light on the nature and significance of the conversion of non-experts. We can compare the ways in which expert conversion might be similar to as well as different from lay conversion and what this means epistemically. For example, suppose the empirical data suggests that experts in a particular field are less likely to succumb the base-rate fallacy compared to non-experts. Further suppose that an epistemically significant conversion crucially depends on not succumbing to the base-rate fallacy. It would be helpful to know what allows an expert to resist committing the fallacy compared to the non-expert and what this might mean epistemically.

Our reflecting on the nature of expert conversion might demonstrate that experts are no less immune from biased thinking or motivated reasoning than non-experts. For example, consider the case of Harvard astronomer, Avi Loeb, who claims that a piece of an extraterrestrial aircraft may be orbiting Jupiter.⁴ What would cause one of the world's top scientists to come to believe such an improbable theory?⁵ Loeb says that he is open to evidence yet fails to see a better explanation of the data than the alien hypothesis. Some of the things we will discuss in chapter

³ See Richard A. Muller (2012), "The Conversion of a Climate Change Skeptic", *The New York Times*, <https://www.nytimes.com/2012/07/30/opinion/the-conversion-of-a-climate-change-skeptic.html>.

⁴ See Avi Selk (2019), "Harvard's top astronomer says an alien ship may be among us — and he doesn't care what his colleagues think," *The Washington Post*, www.washingtonpost.com/lifestyle/style/harvards-top-astronomer-says-an-alien-ship-may-be-among-us--and-he-doesnt-care-what-his-colleagues-think/2019/02/04/a5d70bb0-24d5-11e9-90cd-dedb0c92dc17_story.html. Thanks to Tom Senor for directing me toward this article.

⁵ It is not clear from the article if Loeb always thought that extra-terrestrial life was possible or how strongly he believes that it is possible, so it makes it a little less clear whether he is a genuine or full-blown convert to believing in E.T. Nevertheless, given that I take conversion to come in a matter of degrees, I do not think this undermines his case a useful example for my project.

three will delve into some of the details of this case. For example, Loeb holds a position that is contrary to the scientific consensus. He is putting his reputation on the line and receiving criticism because of his views. Sometimes this means that he might have quite good evidence if he is willing to suffer for his views. But other times, motivated reasoning might better explain why someone, even an expert, is willing to suffer for his or her beliefs. For example, it is possible that someone is consumed with praise and fame to such an extent that they will go beyond the evidence to endorse a radical theory that receives a lot of attention in both academia and the media. The fact that Loeb might demonstrate some of the characteristics of someone who is motivated by attention and fame, could provide a defeater for the weight of his testimony and conversion with respect to belief in extraterrestrial life. If a top research scientist endorses a certain theory, this could lead to practical consequences such as government funded research programs searching for more evidence of extraterrestrial life which might be a waste of resources. This is just one example of how philosophical reflection on the nature of expert conversion can provide a substantial contribution to epistemology generally, and social epistemology.

In addition to shedding light on the nature of biased reasoning in experts and lay persons, reflecting on the differences between expert conversion and the knowledge of the lay persons who depend on the expert's testimony can also help bridge the gap between experts and lay persons. As we shall see in chapter four, there is an epistemic asymmetry between experts and lay persons. By reflecting on the nature and significance of both expert conversion and the knowledge of lay persons who depend on their testimony, we may make headway in bridging that epistemic gap, or, more precisely, mitigating some of the negative epistemic consequences

of the epistemic asymmetry. For example, an unfounded distrust in the testimony of experts by lay persons may lead the lay person to hold unjustified beliefs.

How ought novices respond to epistemically significant expert conversion?

Another reason for focusing on the nature and significance of the epistemic conversion of experts is what it might mean for the epistemic responsibilities of both experts and the laity they testify to. There is already literature that discusses the epistemic responsibilities experts have when communicating information to lay persons, something we shall look at in greater detail in chapter four, but there is not much literature on the epistemic responsibilities of experts who change their mind on a given subject and how to properly and effectively communicate their change of mind to a lay audience without being misleading. We can understand this aspect of expert conversion as *the ethical implications of epistemically (in)significant expert conversion*. Philosophers should reflect on these ethical implications of epistemically (in)significant expert conversion for at least two reasons: one theoretical, one practical.

The theoretical reason for philosophers to reflect on the ethical implications of epistemically (in)significant expert conversion is that it provides another way of thinking about how our epistemology and moral theory are related. If we are dependent on the testimony of others for our knowledge of the world, then those who are in positions of authority have certain responsibilities towards those who epistemically depend on them. Moreover, those who epistemically depend on the testimony of others have different sorts of epistemic responsibilities such as developing their own set of critical thinking abilities, being receptive to the message of experts, developing a healthy skepticism, and cultivating intellectual virtues. This epistemic give-and-take between expert and novice starts to cut at the intersection of the epistemic and the ethical. Greater reflection from a philosophical point of view between the epistemic phenomena

of expert testimony in general and expert conversion will provide us with a better sense of both our epistemic and moral responsibilities surrounding expert conversion.

Are some expert conversions more epistemically significant than others?

There is discussion in the social epistemology literature concerning the number of experts and the credentials of experts and how this bears on the kind of epistemic weight their testimony carries, but something unique about my project is that it looks at another reason why expert testimony may carry more epistemic weight than others. *Ceteris paribus*, when an expert changes their mind on an issue in their domain of expertise, this should add more epistemic weight to their testimony than if a non-expert changes their mind.⁶ Later, we shall see that *ceteris paribus*, some expert conversion adds more epistemic weight than their non-converting expert peer. Consider the example of the Harvard physicist Avi Loeb discussed earlier. The fact that he came to believe much more strongly (or at least that is what the story seems to suggest) that extra-terrestrial life is possible carries much more epistemic weight than if I or some other random Joe came to believe in the possibility of extraterrestrial life.⁷ The reason Loeb's conversion carries more epistemic weight than my potential conversion in believing in the possibility of extra-terrestrial life is because Loeb is an expert in the relevant domain while I am not.

A philosophically interesting point here is exploring the domain of expertise and the relationship it has in distinguishing experts from non-experts. Experts have many true beliefs about a specific domain of truths that are only accessible to the experts. For example, Dr. Loeb is

⁶ See Alvin Goldman (2001), "Experts: Which Ones Should You Trust?" *Philosophy and Phenomenological Research*, 63: 85–110.

⁷ It is not exactly clear what 'may' or 'possibly' means in this context as it pertains to the possibility of extra-terrestrial life. Based on the context I take it to mean something stronger than logical possibility and maybe even naturally possible. It seems reasonable to me that Loeb thinks that there is a greater than zero probability that there is extra-terrestrial life.

an expert in astronomy, and I am not. But there are other cases in which I think deferring to an expert is not as clear. Or it is at least not as clear who is the expert *with respect to the disputed question*. One example I have in mind is the testimony of the disciples of Jesus. Philosophers, like Hume, argue that the probability that a miracle occurring is always less likely than a natural explanation of the putative miracle. Hume is the expert, and the disciples are ignorant and prone to superstition. We can run the same sort of argument using a scientific expert who holds to some version of physicalism. Science tells us that miracles are not possible or are at least very unlikely. So, the testimony of the disciples is trumped by the expertise of the philosophers and scientists. But, in the case of the testimony of the disciples that Jesus is raised from the dead, are they not experts? Aren't the senses of the disciples just as reliable as the sense of the experts? Don't the disciples know that dead people stay dead, yet claimed to have seen the risen Christ? In this case, it is not as clear who is the expert with respect to the relevant question and data. I think reflecting on the conversion of experts and how the knowledge of lay persons depends on their testimony can be philosophically illuminating but also more complex than it first seems.

Does epistemically significant conversions only apply to certain domains of knowledge?

The last item I would like to discuss in this introductory chapter on why this project matters is whether epistemically significant expert conversion applies only to certain domains of knowledge. First, to answer this question, it depends on whether you think there are experts in varying domains of inquiry. For example, most people probably think that there are experts in science, but it becomes less clear what expertise amounts to in disciplines like philosophy, politics, and religious studies. For instance, some people think that because there is not consensus or progress in politics, philosophy, or religion, that there aren't any experts in those domains, or at least experts in a robust sense of the term. To conclude from this fact of

disagreement, or lack of progress, that there are no experts in philosophy, politics, and religion would be unfounded. While experts in philosophy, politics, and religion may not enjoy the same level of expertise as scientists, they do enjoy some degree of expertise. The sorts of things that philosophers, political scientists, and religious studies experts are experts in include which thinkers held which views, what the arguments those thinkers put forth for their positions are, what the current trends are in the discipline, and who the better-known thinkers are.

This sort of expertise has value even if it is not as robust as the expertise of a physicist or a medical doctor. Where there is significant disagreement concerning the nature of certain philosophical, political, or religious questions, deference to experts in these fields may be less warranted.⁸

If there are not experts in other realms of inquiry besides science, can my project elucidate anything in those other fields? I think it can. First, I find the claim that there is not consensus or progress in politics, philosophy, or religion suspect. It may not be the same degree of consensus or progress in the former than in science, but I do not think that it means that there is no consensus or progress at all. It's possible that consensus comes, and progress comes in degrees. And if that is the case, then maybe what my account says about the epistemic significance of expert conversation in science can be applied, although maybe not identically, to other domains of inquiry. It might be the case that because the degree of consensus and progress is less in politics, philosophy, and religion, and hence, the testimony of those domains' experts carries less weight, it does not necessarily follow that the testimony of experts in politics, philosophy, and religion carries no epistemic weight at all. But if the testimony of experts in politics, philosophy, and religions does carry some epistemic weight, particularly more weight

⁸ Thanks to Tom Senor for helping me with this point.

than their non-expert counterparts, then it seems that the conditions I outline in my account of epistemically significant expert conversion can in fact be applied to other domains of inquiry.

Conclusion

To sum, I have given a number of reasons why I think my project matters. Giving an account of epistemically significant expert conversion is philosophically worthwhile for the following reasons: First, there is something philosophically and epistemically unique about conversion. So, reflecting on the nature and significance of conversion in general and expert conversion is philosophically fruitful. Second, reflecting on instances of epistemically significant conversion allows us to discover more about how bias can influence our justification for holding certain beliefs. One way we will explore this idea is looking at studies that suggest that experts are often just as biased as non-experts when forming judgements. This pushes against the idea that experts are de facto more rational than non-experts. Third, looking at the nature and significance of expert conversion may shed light on the nature and significance of lay conversion. Fourth, an account of expert conversion allows us to think about and develop a theory of why some conversion carry more weight than others. It also helps us to think about how the conversion of a non-expert or group of non-experts might carry enough weight to override the counter-testimony of an expert. Fifth, I argue that my account of epistemically significant expert conversion can be applied not only to the conversion of scientific experts but also to experts in other fields. Additionally, my reasons for thinking this is possible also sheds light on the nature of expertise, consensus, and progress in each domain of inquiry.

It is for these reasons that I take my project to be one that is philosophically interesting and important. Having given an apologia for my project, let us now turn to chapter one: the nature and significance of conversions and scientific revolutions.

On the nature of conversion and its epistemic significance

1 Introduction

In this chapter, I seek to explain the nature and significance of conversion and scientific revolutions. My purpose for doing this is to provide the background and context for my account of epistemically significant expert conversion and the proper epistemic response of lay persons who depend on the converting expert's testimony for knowledge of the world. The structure of this chapter is as follows. First, I will explain Thomas Kuhn's account of scientific revolutions. Next, I will develop an account of conversion which is modeled after the structure of a scientific revolution in order to explain the nature of conversion. Last, I will discuss in a general way, why conversion is epistemically significant.

2 The structure of scientific revolutions

In his book, *The Structure of Scientific Revolutions* (henceforth, *Structure*), Thomas Kuhn, among many other things, outlines the structure of scientific revolutions.⁹ According to Kuhn, the structure of a scientific revolution goes as follows: normal science, puzzle-solving, paradigm, anomaly, crisis, revolution.¹⁰ Let us look at each of these steps in turn.

Kuhn understands *normal science* as something that essentially involves *puzzle-solving* within a *paradigm* and does not aim at novelty. Concerning problem-solving, Kuhn writes, "...perhaps the most striking feature of the normal research problem we have just encountered is how little they aim to produce major novelties, conceptual or phenomenal."¹¹ Something important to keep in mind, which is stressed by Ian Hacking, is that just because Kuhn thought

⁹ See Thomas Kuhn (1962/2012), *Structure of Scientific Revolutions*, 50th anniversary edition, Chicago: University of Chicago Press.

¹⁰ For a helpful summary of *Structure*, see Ian Hacking (2012), Introductory essay, in Thomas Kuhn (1962), *The Structure of Scientific Revolutions*.

¹¹ Kuhn, *Structure*, 35.

that normal science didn't aim at novelty, it doesn't follow that Kuhn didn't think the practice of normal science and puzzle-solving isn't important. On this point, Hacking elaborates as follows:

Normal science is characterized by a paradigm, which legitimates puzzles and problems on which the community works. All is well until the methods legitimated by the paradigm cannot cope with a cluster of anomalies; crisis results and persists until a new achievement redirects research and serves as a new paradigm. That is a paradigm shift.¹²

Paradigms, according to Kuhn, share the following two characteristics. First, paradigms are "...sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity." Second, paradigms are, "...sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve."¹³

There are at least two ways of understanding a *paradigm* according to Kuhn. The first way of understanding a paradigm is in the global sense. The *global* sense of a paradigm is that which binds the scientific community together. This includes shared practices and commitments, symbolic generalizations, models, and exemplars.¹⁴ The second sense of a paradigm, according to Kuhn, is the local sense of a paradigm. A *local* sense of a paradigm concerns a particular kind of exemplar, where an exemplar is the best and most instructive kind of example. Exemplars were used as particular examples in analogical arguments. Hacking writes the following about exemplars and their use in analogical reasoning:

In general: Something is in dispute. One states a compelling example about which almost everyone in the audience will agree - a paradigm. The implication is that what is in dispute "is just like that."¹⁵

¹² Hacking, Intro, xxiii

¹³ Kuhn, *Structure*, 10-11.

¹⁴ In later chapters, I will discuss a particular condition called the social calibration condition which is very similar to Kuhn's global sense of a shared paradigm.

¹⁵ Hacking, Intro, xix-xx.

To better grasp what Hacking is saying here, let us consider the following example. Consider how a given type of physics problem can be solved in a certain way. The way this physics problem is solved is to compute the notion of Newtonian physics by using the law of gravitation which involves using the notion of gravitational force. This is an exemplar of doing physics. First, identify and discover the kinds of forces that are relevant to that kind of system (e.g., electrostatic, magnetic, etc.) and the associated force law. Second, use Newton's second law to compute the behaviors determined by those forces. So, the paradigm of computing planetary motion sets the stage for the physics of solids, liquids, and geophysics: discover the relevant forces and force laws in each case.¹⁶

The next feature in the structure of a scientific revolution is an anomaly. An *anomaly* is a particularly worrisome puzzle within a paradigm that is resistant to being solved.¹⁷ There is a disagreement between Kuhn and Karl Popper about the falsification of scientific theories and worrisome puzzles. Kuhn, unlike Popper, thought that scientific theories were very rarely falsified.

In contrast to Popper, who understood the philosophy of science as a process of conjectures and refutations, Kuhn thought that anomalies within a paradigm were to be expected. It is not until the anomalies become intractable that they cause a crisis within a paradigm.¹⁸ A *crisis*, according to Kuhn, occurs when an anomaly becomes intractable. Concerning the nature of a crisis within a paradigm, Kuhn understands a crisis to involve 'extraordinary' rather than

¹⁶ Thanks to Barry Ward for providing this helpful example of a paradigm and exemplar.

¹⁷ See Alexander Bird (2018), "Thomas Kuhn," in *The Stanford Encyclopedia of Philosophy*, <https://plato.stanford.edu/entries/thomas-kuhn/>.

¹⁸ See Karl Popper (1963), *Conjectures and Refutations: The Growth of Scientific Knowledge*, London: Routledge. Cf. Stephen Thorton (2018), "Karl Popper," *The Stanford Encyclopedia of Philosophy*, <https://plato.stanford.edu/entries/popper/>.

ordinary (normal) research with a “proliferation of competing articulations, the willingness to try anything, the expression of explicit discontent, the recourse to philosophy and to debate over fundamentals.”¹⁹

Once a paradigm is in crisis, a revolution occurs. Before the revolution occurs, Kuhn thinks that a crucial decision between competing paradigms must be made. Concerning this crucial decision between competing paradigms, He writes:

The decision to reject one paradigm is always simultaneously the decision to accept another, and the judgment leading to that decision involves the comparison of both paradigms with nature *and* with each other.²⁰

What Kuhn seems to be saying is that when a subject makes a judgement concerning two competing paradigms, the acceptance of one paradigm entails the *psychological* rejection of the other. One reason for thinking Kuhn’s incommensurability thesis is psychological rather than logical in nature is because if two paradigms are incommensurable then it is not clear that the two paradigms share a common language in which a logical contradiction between the two can be derived.²¹ When changing from one paradigm to another you are adopting a new form of life.

¹⁹ Kuhn, *Structure*, 91. Cf. Hacking, Intro, xxvii.

²⁰ Kuhn, *Structure*, 78. In my account of the nature of conversion, I do think there is a difference from positively believing *P* to suspending judgment about *P*. While I do not want to say that moving from believing *P* to suspending judgment that *P* is a kind of conversion, I do want to distinguish between believing *P* and then suspending judgment that *P*. I think we should call this *loss of belief* rather than conversion. For conversion to take place, I think you must move from believing *P* to believing that not-*P*. If this is how we are understanding conversion, then Kuhn’s idea that moving from one paradigm to another involves a simultaneous decision to accept one paradigm and reject another. For example, a theist might suspend judgment concerning the existence of God and become an agnostic. I do not want to say that they converted from theism to agnosticism. I do think it is correct to say that once a theist moves from theism to atheism, even with an agnostic stage in between, that the theist has converted and when they become an atheist have, simultaneously rejected theism, and accepted atheism. Thanks to Tom Senor for helpful discussion concerning this point.

²¹ Thanks to Barry Ward for pointing out this argument to me.

The problems, questions, and methodologies you employ involve a completely different worldview.

Once the decision to reject the old paradigm and accept the new paradigm has been made, a revolution has occurred. Kuhn understands a change in paradigms — a revolution — as a change in worldviews. A change in worldview, according to Kuhn, is not merely metaphorical. So, when he writes that “...after Copernicus, astronomers lived in a different world”, he was not speaking entirely in metaphor.²² A question that arises from Kuhn’s understanding of a scientific revolution as a change of worldview, or of seeing the world in a particular way, is whether the old and new paradigms have anything in common. This is where Kuhn discusses his *incommensurability thesis*.

Kuhn’s incommensurability thesis can be captured in the following argument. First, Newton thought mass was $f = ma$ and Einstein thought mass was $E = mc^2$. Mass understood in Newtonian terms makes no sense in an Einsteinian system and vice versa. If neither sense of mass makes sense in either of the theories, then there is no way to compare the two theories. But if there is no way to compare the two theories, then there is no rational basis for favoring one theory over the other.²³

Considering this argument for incommensurability, two tensions arise. First, if incommensurability is true, then progress in scientific knowledge seems to be undermined. If you cannot compare the different paradigms of Newtonian versus Einsteinian physics, how can you make a judgement concerning whether one is better than the other? This seems to conflict with scientific realism in which science gives a true description of reality.

²² *Structure*, 117. Cf. Hacking, “Introduction,” xxviii.

²³ Hacking, “Introduction,” xxx-xxxi.

Second, incommensurability seems to be in tension with metaphysical realism, the view that there is a mind-independent world and philosophy, and science is in the business of describing it. If the scientific enterprise cannot be thought of as providing a true mind-independent description of reality, then it seems that one of our best ways of knowing reality is not in fact mind dependent. So, Kuhn could be charged with a form of idealism.²⁴

In his paper, “Objectivity, Value Judgment, and Theory Choice”, Kuhn states that incommensurability means that there are “...significant limits to what the proponents of different theories can communicate to one another.” Additionally, “...an individual’s transfer of allegiance is often better described as conversion than as choice.”²⁵

Kuhn seems to think that just because there are significant limits in communication between paradigms, it does not necessarily follow that there is no communication whatsoever. It seems to me that for a paradigm shift to occur there must be at least a minimal shared amount of content and communication between the two paradigms, otherwise, there would be no possibility of comparing the two theories at all which would conflict with Kuhn’s understanding of crisis mentioned above. A crisis in paradigms only seems possible if there is some meaningful connection between one scientific theory and another.

Now that we have a basic understanding of Kuhn’s structure of scientific revolutions, let us turn to the structure of conversions.

3 An account of the structure of conversion

I understand conversion to be a change of one’s mind concerning some position. More precisely, a conversion occurs when a subject goes from believing P to believing not-P (or vice

²⁴ Barry Ward explained to me these two tensions in Kuhn’s view of incommensurability.

²⁵ See Hacking, “Introduction,” quoting Kuhn, “Objectivity,” in *The Essential Tension*.

versa). On my view, ceasing to believe P is necessary, but not sufficient for conversion. Not all changes of mind count as instances of conversion. Let us distinguish between ordinary changes of mind and conversion.²⁶ An *ordinary change of mind* occurs when someone believes P but then the subject ceases to believe P and no longer has those associated desires that come with believing P. Additionally, the subject does not necessarily disbelieve P. For example, consider a case where an avid sports fan believes that their team will win. As the game progresses and their team performs terribly, the person ceases to believe that their team is going to win, and they no longer believe that their team will win. They do not necessarily believe that their team will lose but they have ceased to believe that their team will win.²⁷

In contrast, *conversion* is stronger than ordinary changes of mind. An ordinary change of mind is necessary for conversion, but not sufficient. In addition to an ordinary change of mind, someone converts when they also go from ceasing to believe *P* to believing not-*P*. In addition to shifting from believing *P* to believing not-*P*, the convert shifts in the associated desires that come along with believing that not-*P*. Religious conversion is the kind of thing I have in mind when I discuss the nature of conversion more generally. When a person goes through a religious conversion, they do not merely have an ordinary change of mind.

For example, when a person goes from believing that God *does not* exist to believing that God *does* exist, and acquires the associated desires with those beliefs, then the individual has converted.²⁸ What seems to distinguish mere changes of mind from conversion is the *centrality*

²⁶ I owe this distinction to Tom Senor.

²⁷ I owe this example to Tom Senor.

²⁸ Having the associated desires that normally come with the beliefs are not necessary, but indicative that a conversion has taken place. For example, I think it is possible to believe that God does not exist yet hope that He does exist even if typical theistic belief usually involves hoping that God exists. I also think it is possible to believe that God exists without hoping that

of the belief that has changed within the noetic structure of the convert. We can distinguish between central beliefs within a noetic structure and peripheral beliefs within a noetic structure. Central beliefs have more beliefs depend on them than do peripheral beliefs. For example, my belief that I know that there is an external world (and that I am not a victim of a Cartesian demon) is more central to my noetic structure than my belief that it will rain today (given that it's cloudy outside). If I were to withhold belief in the external world compared to withholding belief about the chance of rain my noetic structure in the former case would radically change compared to how my noetic structure would change in the latter case. In the former case, all my beliefs about the external world would be called into question whereas in the latter case my belief that I am a reliable predictor of the weather may change a little. The difference between mere change of mind and conversion is that in conversion we change a (or many) central belief whereas in mere change of mind, the beliefs that change are less central. The cognitive restructuring is much more significant in cases of conversion than in cases of mere changes of mind.

In a later chapter, I will use this definition as it applies to expert conversion: where an expert conversion entails an expert going from believing P to believing that not-P (or vice versa).²⁹ My account of the structure of conversion will find analogues in the various steps of Kuhn's structure of scientific revolutions. Let us look at each of the analogous steps for the structure of conversion to gain a better understanding of the nature of conversion.

First, we have normal beliefs, emotions, and behaviors within the context of a person's paradigm, or worldview by which they solve puzzles. Let us develop the notion of a non-scientific paradigm further. Non-scientific paradigms or worldviews are like a scientific

He exists. Although, it seems to me that the two (believing that God exists and hoping that God exists) normally are associated.

²⁹ See chapter three of this dissertation for my discussion of expert conversion.

paradigm. A person has a non-scientific paradigm by which they interpret the world and solve various puzzles they experience. Examples of these everyday puzzles that people solve via their paradigms include things such as answering why certain actions are morally wrong versus morally right, or whether life has meaning and if so, what makes life meaningful. Additional puzzles people use their paradigms or worldviews to solve is answering questions of origin and questions about the nature of human suffering and evil. Metaphysical questions such as the existence and nature of reality or the nature of the human person are also existential puzzles solved in different ways by differing paradigms.

One way in which an individual's paradigm may differ from that of a scientific paradigm is that usually an individual's paradigm, and the problems one solves involve more than just empirical phenomena. An individual's paradigm, and the problems that one solves within this framework, can encompass other phenomena such as sensory experiences, philosophy, psychology, morality, religion, and politics. Let us consider two examples of what this might look like in practice.

Puzzles: Let us use the puzzles mentioned above. What is the nature of morally right or wrong actions? What is the meaning or purpose of my life and the lives of others? What is the nature of reality? Who or what am I? Where did I come from? Where am I headed?

Individual 1: Suppose that individual-1 is a naturalist. Individual-1 can answer these puzzles in the following way: The nature of morality depends on one's moral theory, but God is not the source and grounding of morality. The meaning of life can be objective or subjective, but God is not the one who confers meaning to life. The nature of reality excludes the existence of God. Human persons are less likely to be composed of immaterial substances. Science provides an adequate explanation of the origins of life and most likely there is no life after death.

Individual 2: Suppose that individual-2 is a traditional theist. They might answer the puzzles in the following way: Generally, morality is objective and can be known. God is the metaphysical ground and source of morality. The meaning of our lives is also grounded in the existence of God and His will for our lives. The nature of reality at least includes the existence of God. It is possible that human persons are composed of

immaterial substances. Science does not necessarily provide a complete or ultimate explanation of the origin of humanity and possibly there is life after death.

Here we have an example of two different paradigms. These two different paradigms, or worldviews, are ways in which individuals seek to solve the puzzles of existence. Moreover, these puzzles, unlike the puzzles in scientific paradigms, are not dealing with exclusively empirical data points. Nevertheless, both scientific paradigms, and theistic/atheistic worldviews try to best explain the data at hand.

Next, there is an analogue between *anomalies* in a scientific revolution and the conversion of an individual. One way in which there is a similarity between anomalies in a scientific revolution and the conversion of an individual is that there are certain puzzles that begin to generate worries or become intractable in a scientific paradigm just as there are anomalies in an individual's paradigm that might become worrisome or intractable. For example, a moral skeptic might begin to recognize that the tension between what seems like common sense concerning morality and what their view entails is a puzzle that cannot be solved. Or maybe a reductive physicalist about mental phenomena begins to recognize the intractability of the mind-body problem in purely reductive terms.

Additionally, there is an analogue between the structure of scientific revolutions and the structure of an individual's conversion with respect to the notion of *crisis*. Just as a crisis occurs in a scientific revolution when the anomalies become too worrisome, so too do crises occur within an individual's paradigm or worldview. The explanatory problems caused by severe anomalies within a person's worldview reach such a degree of crisis that the individual can no

longer hold to their position without some degree of cognitive dissonance or sacrifice of rationality.³⁰

Finally, once the revolution has occurred for an individual, and one converts, there will be an element of incommensurability between the convert and the group of people whose beliefs they previously shared. The group of people to whom the convert previously belonged will not be able to understand or communicate to the same degree with the convert as they previously did. The convert, in a way like a change in a scientific revolution will “see” the world in a new way. This is not to say that there is no communication or understanding between the convert and their previous group.

Consider the following example. Aristotle and Galileo describe a pendulum in the same way, at one level. A pendulum is a rock, tied to a string, hanging from a hook. Nevertheless, Aristotle and Galileo explained the motion of the rock *in very different terms*. Aristotle describes the motion of a rock by stating that the rock is trying to reach its natural place but is constrained by the string. On the other hand, Galileo explains the motion of the rock as an oscillatory motion that could go on forever if not for friction.³¹

Following Timothy McGrew, I take a more moderate account of Kuhn in which it is not that Aristotle or Galileo could not *in principle* “see” the other position. Rather, it can be very *difficult* to “see” the other viewpoint. I think the example generalizes to the case of the convert. It is not that those who have not converted cannot in principle have access to the evidence a convert enjoys in virtue of having believed both positions. Rather, it can be very difficult to

³⁰ This does not entail that all experiences of a crisis and their ultimate resolution are *de facto* rational. I am merely claiming that from a psychological point of view, it seems to me that this is what is going on phenomenologically.

³¹ I owe this example to Timothy McGrew from personal communication.

“see” a different position from your own. I think the convert has privileged access to certain evidence in the sense that it is easier for them to access, all things considered, than their non-converting peer.

4 Why is conversion epistemically significant?

4.1. An Argument for the Epistemic Significance of Conversion

One reason for thinking that conversion in general is epistemically significant is due to the fact that the convert has understood both sides of a position. It is important to keep in mind that conversion is not always epistemically significant. Often, people change their minds for bad reasons and do not adequately understand the position they converted from. But sometimes, having once held a position, and then later rejecting that position and adopting a new one will provide added insight into both positions that someone who has not held both positions does not have access to.

For example, Antony Flew is widely published within the philosophy of religion. In “The presumption of atheism,” Flew (1972) argues that atheism should be the default rational position and that the theist has the burden of proof in establishing that God exists.³² Plausibly, Flew understood the arguments in favor of belief in God. Later in his career, Flew changed his mind and came to believe that God did in fact exist. Flew became convinced of Aristotelian arguments in favor of God’s existence.³³ A further plausible assumption is that Flew also understood the

³² See Antony Flew (1972), “The Presumption of Atheism,” *Canadian Journal of Philosophy*, Vol. 2, No. 1. 29-46.

³³ For a full explanation of why Flew changed his mind concerning the existence of God, see Antony Flew and Roy Abraham Varghese (2007), *There is a God: How the World’s Most Notorious Atheist Changed His Mind*, New York: HarperOne. There is controversy concerning the accuracy of the book, given that it was written primarily by Varghese but there are also multiple papers published in *Philosophia Christi* in which Gary Habermas interviews Flew about his conversion and Flew affirms it. See Antony Flew and Gary Habermas (2004), “My

arguments in favor of belief that God exists. Plausibly, given that at different points in time endorsed both positions, and understood those positions well, Flew possessed evidence and insight into the debate that others, who had not held both positions, did not. Additionally, converts are not as vulnerable to motivational biases as non-converts.³⁴

Sometimes those who convert possess an additional epistemic boost, in virtue of their conversion, over those who have not converted. To support this claim, consider William Alston's thoughts on the nature of privileged access when he writes the following:

To say that a person has privileged access to his current mental states is to say that his epistemic position *vis-à-vis* propositions ascribing current mental states to himself is favorable in a way no one else's position is. The simplest standard formula for a privileged access claim would be: Each person enjoys _____ - *vis-à-vis* propositions ascribing current mental states to himself, while no one else enjoys _____ *vis-à-vis* such propositions.³⁵

Alston goes on to discuss several concepts that fill in the blank of his definition. They include concepts like infallibility, omniscience, indubitability, and incorrigibility.³⁶ For our purposes, what is more important is Alston's idea that privileged access is something an individual enjoys while no one else enjoys. In what follows, I will develop an analogue with respect to the privileged access converts enjoy with Alston's account of privileged access with respect to a subject's mental states.

There seems to be an analogue of some degree of privileged access to understanding both positions when one converts. One reason we might think that a convert enjoys a privileged access in understanding both positions is that they have an insider's perspective into both

Pilgrimage from Atheism to Theism: A Discussion between Antony Flew and Gary R. Habermas," *Philosophia Christi*, 6 (2):197-212.

³⁴ I owe this point to Eric Funkhouser.

³⁵ See William Alston (1971), "Varieties of Privileged Access," *American Philosophical Quarterly*, Vol. 8, No. 3, 230.

³⁶ *Ibid.*, 230.

positions. Many times, there are aspects of a position or worldview that cannot be fully understood unless one adopts that position or sees the view from the perspective of a believer. Examples of this line of thinking can be traced back to St. Anselm, who paraphrases St. Augustine, when he says, “I believe so that I may understand.”³⁷ There is a kind of evidence that is available only to those who believe which can lead to a kind of understanding. Other concrete examples of believing that leads to understanding includes a person who goes from believing that women don’t have anything additional to add to a discussion qua being a woman to believing that a woman does contribute more evidence about certain things about reality in virtue of being a woman.³⁸

In this context, to understand something, or to understand something better or worse involves at least two things. First, it involves possessing more evidence that the proposition in question is true. So, for example, I better understand general relativity when I possess more evidence that general relativity is true. Second, I better understand something when I grasp how the evidence support the truth of the proposition. So, for example, not only do I better understand general relativity when I possess more evidence that general relativity is true but that I also see or grasp how the evidence I possess supports or confirms the truth of general relativity.

Daniel Wilkenfield offers an account of understanding that I find plausible.³⁹ He takes understanding to encompass the following two claims:

³⁷ See Saint Anselm of Canterbury, *Proslogium*, Chapter 1, Medieval Sourcebook, Fordham University, <https://sourcebooks.fordham.edu/basis/anselm-proslogium.asp>.

³⁸ For a more complete treatment of the epistemic and moral issues surrounding women and other minority groups see Miranda Fricker (2007), *Epistemic Injustice: Power and the Ethics of Knowing*, Oxford: Oxford University Press.

³⁹ See Daniel Wilkenfield (2013), “Understanding as representation manipulability,” *Synthese*, Vol. 190, No. 6, 997-1016.

- (1) Understanding is the possession of the right sort of mental representations of that which is understood.⁴⁰
and,
- (2) A mental representation counts as being ‘of the right sort’ in virtue of the fact that possession of it enables someone to perform intellectual feats relevant in that context.⁴¹

Wilkenfield thinks that understanding is a cognitive achievement⁴² and the critical component of understanding is that it provides an empowering role to the one who understands.⁴³ The empowering role provided to the one who understands is the ability to utilize what is understood effectively.⁴⁴ Wilkenfield thinks that understanding comes in degrees and is also context-sensitive.⁴⁵

Considering this notion of what it means to understand some proposition, a convert may enjoy an epistemic boost in virtue of their conversion because there is evidence that is only available to the believer. Consequently, if there is evidence that is only available to the believer, then possibly, the convert, in virtue of their conversion, possesses evidence that can only be had in virtue of having believed both propositions. An example of this might be where a person can only have a religious experience if they first believe that religious phenomena are possible. A person who does not believe that religious experiences are possible may not have access to the possible evidence conferring experiences that someone who does believe that religious

⁴⁰ Wilkenfield (2013), 1000.

⁴¹ Ibid.

⁴² Ibid., 997.

⁴³ Ibid., 1002.

⁴⁴ Ibid.

⁴⁵ Ibid., 1007.

experiences are possible. It is in this sense that certain kinds of evidence are only available to believers.⁴⁶

Another reason for thinking that there's an analogue between the privileged access an individual has with respect to their mental states and the privileged access a convert has with respect to understanding both positions (the original position they converted from and the new position they converted to) is that there are certain parts of a worldview or paradigm, which are important for understanding the worldview, that can only be had if one adopts the particular beliefs in question.

One example of the kind of privileged access a convert enjoys is someone who has had a putative religious experience. I have two cases in mind. First, consider a case in which someone is a committed naturalist and does not believe that there is a God. Later, they have a religious experience and convert. There seems to be certain experiences and evidence salient to understanding naturalism which a person who had never been a naturalist does not enjoy – to experience what it's like to be a naturalist.⁴⁷ Because they have converted based on a religious experience, the convert also has the experience of what it's like to believe in God. To support this notion, consider what Paul Moser says with respect to belief in God:

First-hand volitional evidence and knowledge of God's reality involve a *directness* in evidence and knowledge of divine reality that entails their being irreducible to mere propositional knowledge or evidence *that* God exists. The directness involves evidence of an "I-You" volitional interaction between humans and God that is absent from traditional arguments for God's existence... . My talk of (first-hand) evidence and knowledge of

⁴⁶ I am using the term 'believers' in a general sense. I do not mean only religious believers, but anyone who believes that a certain proposition is true. I use religious belief because I think it is a helpful example.

⁴⁷ One way in which it is like to be a naturalist includes seeing or viewing the world as a closed causal system in which no supernatural activity occurs. Someone who has always been a theist may not have ever had this experience.

"God's reality" (or of "God") should be understood accordingly, as irreducible to mere propositional evidence or knowledge.⁴⁸

Moser argues that first-hand knowledge of God is irreducible to propositional evidence or knowledge of God. In a similar way, I argue that first-hand experience of believing a position and then converting to another position provides some reason to think that the convert is in an epistemically privileged position over the non-convert at least in some instances. It is not necessarily the case that the non-convert cannot possess the kind of evidence that may be enjoyed by a convert, but that it may be very difficult for the non-convert to see both positions in the way a convert sees. The ability of being able to see or have privileged access to evidence in comparing positions is comparative in nature and comes in degrees.

Having experienced what it's like to be a naturalist can confer certain experiences and evidence that isn't available to someone who has never endorsed the position themselves in the following ways. First, the way we *experience* certain things differs. When you hold a certain position, there is a qualitative sense in which things seem to you that cannot necessarily be captured by merely entertaining the position in one's mind. This difference in experience can confer a degree of evidence that isn't available to the person who does not have that experience. For example, two people can literally see the same mountain-top view. Yet, for person the first person, they experience an overwhelming sense that God exists when at the mountain top while the other person, who literally sees the same thing, has a different, non-theistic experience of the mountaintop.

⁴⁸ See Paul Moser (2008), *The Elusive God: Reorienting Religious Epistemology*, Cambridge: Cambridge University Press, 63. Cf. Bruce Russell (2009), "Review of Paul K. Moser's *The Elusive God: Reorienting Religious Epistemology*," *Notre Dame Philosophical Reviews*, <https://ndpr.nd.edu/news/the-elusive-god-reorienting-religious-epistemology/>.

Second, the way we *feel* about certain things change. The degree to which one can feel a certain way with respect to something cannot be fully experienced unless one adopts the position in question. For example, if I don't feel concerned about the threat of global warming because I am someone who denies anthropogenic climate change, then my lack of feeling might tend toward me not analyzing the evidence sufficiently. And this has epistemic significance.

Third, the way we *think* about things changes. If our perceptions and feelings change when we change our minds or convert, then it seems natural to think that our thinking about the world changes. Consider what Joanne Lovesey says when she writes:

In the life of [a] religious convert to the results will be far-reaching: as will become clearer in subsequent chapters, even something as simple as a change in one single belief, will have implications for emotions, behaviours, and other beliefs too (among other things) and these changes in turn trigger further changes, and this may continue until the resemblance to the starting position is faint.⁴⁹

For example, when I come to believe that a certain individual is a morally corrupt person, I will begin to see that person as morally corrupt. Moreover, I may even begin to develop negative feelings toward that person, and in turn, my behavior around them may change. This line of reasoning may be applied to a convert. The convert will have access to a set of perceptions, feelings, beliefs, and behaviors that the non-convert does not.

If this is true, then believing P places you in a better epistemic position to understand O than merely entertaining P. Moreover, this type of understanding is a privileged kind of access that a person who has not converted has greater difficulty enjoying. The kind of privileged access enjoyed by a convert is weaker than the kind of privileged access enjoyed by an individual with respect to their own mental states because there is more room for misunderstanding a position or

⁴⁹ See Joanne Lovesey (2016), *Religious Conversion: A Philosophical Account*, Ph.D dissertation, Heythrop College, University of London, 22.

being mistaken with respect to adopting an entire worldview than there is in being aware of one's own mental states. Nevertheless, there is a kind of privileged access enjoyed by a convert with respect to understanding both positions.

The argument made above can be stated as follows:

1. If there are experiences that a convert is more likely to enjoy in virtue of their conversion and those experiences have positive evidential import, then the experiences are epistemically significant.
2. There are experiences that a convert is more likely to enjoy (in virtue of their conversion), and those experiences have positive evidential import.

Therefore,

3. The experiences are epistemically significant. (MP 1,2)

Defense of premise 1

The conditional statement is plausible. If there are experiences that have evidential import that are more likely to be available to the convert qua their conversion, then it seems that this is epistemically significant. On my view, for something to have evidential import is an essential feature of epistemic significance. The crux of this argument is premise (2): whether there are in fact such evidence conferring experiences that can be had only in virtue of being a convert. Let us turn to the defense of premise (2).

Defense of premise 2

One reason for thinking that if the experiences had by a convert are of a privileged kind and those experiences have evidential import is because the convert is in a unique position to compare the competing experiences of both paradigms. The convert has more data, based on the experiences of having held both positions, to properly compare the relevant explanatory merits of both positions (the one converted to and the one converted from). For this reason, the convert is in a position, or is more likely to be in a better position, than a non-convert who merely analyzes the argument from an outsider's perspective. But if a convert has access to evidence that a non-

convert doesn't have access to in virtue of having endorsed both positions, then it seems like the judgment made by the convert, who is in a privileged position in comparing and contrasting available experiences and evidence, is in a position to testify to their judgement (which possibly renders epistemically significant information to non-converts) and are possibly in a better position than a non-convert for having sifted through more evidence by having had those particular experiences.

What reason do we have for thinking that there are certain experiences that render it more likely that a convert (in virtue of their conversion) is in a better epistemic position to understand that a non-convert does not have? I have given some of the reasons in the previous section. The convert has certain qualitative experiences, or experiences of what it is like to believe, feel, and behave as someone who holds a certain position. In virtue of having these experiences of what it is like to believe, feel, and behave as someone who holds a certain position, the convert is in a very good position to understand the position.⁵⁰

Additionally, why should we think that these qualitative experiences had only by converts has evidential import? Take the case of having a religious experience. First, let us consider person one.

Person one (P1)

P1 is a theist and believes that religious experiences are possible. Examples of a religious experience includes the experience that God is speaking to you.⁵¹ There are certain

⁵⁰ This is not to say that the convert is always in a good position to understand the position that they endorse. It is simply to say that *ceteris paribus*, those who endorse a position are in a good position to understand that position and that they enjoy certain access to what it is like to think, feel, perceive, and behave from the point of view of someone who endorse that position.

⁵¹ By speaking to you, I do not necessarily mean that God speaks to the individual audibly. Many times, when people report that God has spoken to them, they claim that there was no audible words spoken, yet they claim that the content of what was said was very clear. Concerning this point, Mark Webb (2011) writes:

religious experiences that P1 enjoys because of her religious belief. For example, her belief that God exists and that he communicates with people provides the appropriate context for her to have the experience that God is speaking to her. Moreover, she is often able to distinguish between God speaking to her and her own thoughts.

Person two (P2)

P2 has a similar experience to the experience had by P1, but P2 is an atheist and does not think that God speaks to people. Her belief that there is no God, and that God doesn't speak with people rules out the possibility of, or at least makes unlikely, her having 'God is speaking to me' experiences. For the most part, these similar experiences had by P2 are understood as merely her own thoughts.

Person three (P3)

P3 differs from both P1 and P2 in virtue of having converted from atheism to theism. Once an atheist, P3 did not believe that God spoke to people (there's no God to do the speaking). He did not think he had any religious experiences, rather what he thought he was experiencing were his own thoughts instead of God speaking to him. Later, P3 becomes convinced by the arguments from natural theology and begins to believe that God exists. He converts from atheism to theism. Through the process of his conversion, P3 notices how the way he saw the world as an atheist differs from the way in which he sees the world as a theist. One example of this includes the fact that he is having religious experiences. He senses that God is speaking to him, listening to his prayers, etc. P3 seems to have, in virtue of his conversion, experiences that neither P1 nor P2 have had given that they have never converted from the current position they hold.

These three examples lead to another reason for thinking that premise (2) is true.

Converts have the experience of *going through the process* of converting which provides for them a unique experience of seeing the world from both points of view. This is another

Reports of religious experiences reveal a variety of different kinds. Perhaps most are visual or auditory presentations (visions and auditions), but not through the physical eyes or ears. Subject's report "seeing" or "hearing," but quickly disavow any claim to seeing or hearing with bodily sense organs. Such experiences are easy to dismiss as hallucinations, but the subjects of the experience frequently claim that though it is entirely internal, like a hallucination or imagination, it is nevertheless a veridical experience, through some spiritual analog of the eye or ear.

See Mark Webb (2011), "Religious Experience," in *The Stanford Encyclopedia of Philosophy*, <https://plato.stanford.edu/entries/religious-experience/>.

experience that can only be had if one has in fact converted. Moreover, the experience of having gone through the process of conversion can have evidential import. This is possible because having experienced the world from both perspectives (which includes having experiences that are possible only if you believe the position), the convert can possess more evidence than the non-convert which would allow them to make a more reliable judgment between the two positions.

4.2 The structure of conversion and its epistemic significance

In what ways do the structure of conversion inform us about the epistemic significance of conversion? One way that understanding the general structure of conversion can inform us about the epistemic significance of conversion is that by delineating the different stages of conversion, we can more accurately determine where a person went wrong in one's reasoning process. For example, by giving a more detailed account of the process of conversion (i.e., normal belief – anomalies/cognitive dissonance – crisis – conversion) we are more likely to be able to pinpoint exactly where the individual went wrong with respect to one's conversion (if we think he or she did go wrong). To determine whether a conversion was epistemically significant, we need to determine conditions for legitimate and illegitimate belief formation. For example, if we come to find out that a person converted to a particular religion based on psychological manipulation, then we have reason to think that this conversion was not epistemically significant.

The ability to determine where an individual went wrong with respect to changing his or her beliefs is something that is epistemically significant. It is epistemically significant because it tells us how an old belief was rejected or how a new belief was formed and given our theory concerning the justification of belief formation, this will play a crucial role in our determining

whether the individual was justified in rejecting the old belief and justified in adopting the new belief.

4.3. An Objection: *Entertaining versus believing a proposition.*

Let us now consider another objection to my argument that sometimes there are experiences had by a convert in virtue of his or her conversion, which place them in a better epistemic position compared to their non-converting peer, and those experiences have evidential import which renders the experiences epistemically significant. The objection challenges a principle of my position. Let us call it the conversion principle, (CP). CP is the following:

(CP) A subject, S, is more likely to enjoy privileged access to evidence e than S's non-converting peer, R, if S has experienced a conversion in which they previously believed P and now believe not-P.

The objection is that CP is false because R can have access to evidence e in virtue of merely entertaining a proposition p rather than fully believing p. Hence, conversion does not place the S in a better epistemic position than R with respect to the evidence for P. Merely entertaining the position is sufficient for accessing the evidence for P.

Reply: Some evidence is only captured by having the experience, so it is possible that entertaining is as significant as believing, but not always. Unless you believe, you do not see in some cases. My view is that it is true that merely entertaining a position may sometimes be sufficient for accessing the evidence, but this is not always the case. The burden of proof is on the objector to demonstrate that it is always the case that merely entertaining a position can provide you with the same degree and kind of evidence that believing a position gives you. Until they can do that, I don't think the objection succeeds.

5 Conclusion

In this chapter we have discussed the structure of scientific revolutions and seen how the conversion of an individual has an analogous structure. Additionally, we have discussed reasons for thinking that conversion is epistemically significant. We considered the argument that the convert understands both sides of the debate. Understanding both sides allows the convert to be

in a position to make a better assessment as to which position is superior. Second, we discussed a similar argument to the both-sides argument which looked at how the convert has unique experiences and is in a better position to have evidence that the person who hasn't converted doesn't. This evidence allows the convert to be in a privileged position in adjudicating between the two competing views. This privileged position is less likely to be available to the non-convert.

Chapter 2: On the Nature and Significance of Expertise and Goldman's Novice/2-Expert Problem

1 Accounts of expertise

In this chapter, I seek to elaborate on the nature and significance of expertise. In the last chapter, we looked at the epistemic nature and significance of conversion generally. In this chapter, I'll focus on the epistemic nature and significance of expertise in a general way. Drawing from the conclusions of the first two chapters, I will develop an account of the epistemic nature and significance of expert conversion in chapter three.

The structure of this chapter goes as follows: First, I will look at the different views about the nature of expertise. I will consider the views of Alvin Goldman, Scott Brewer, and Elizabeth Fricker. Next, I will discuss the significance of expertise, particularly how it relates to our theory of knowledge. Last, I will discuss a particular problem in the literature on the epistemology of expertise; Goldman's novice/2-expert problem.

1.1 Goldman's Account of Expertise

In his paper, "Experts: Which Ones Should You Trust?", Alvin Goldman (2001) gives an account of expertise that involves at least three possible features.⁵² Experts have more true beliefs and/or fewer false beliefs within the E-domain compared to others, the capacity or disposition to use that information to form beliefs in true answers to new questions in the E-domain, and they have an extensive body of knowledge with respect to primary and secondary questions within the E-domain. Let's turn to each of these three features in greater detail.

1.1.1 Cognitive Expertise is Veritistic (truth-linked)

⁵² See Goldman (2001).

First, Goldman makes a distinction between skill-expertise and cognitive expertise. Goldman understands *skill-expertise* as follows:

Some kinds of experts are unusually accomplished at certain skills, including violinists, billiards players, textile designers, and so forth. These are not the kinds of experts with which epistemology is most naturally concerned.⁵³

Skill-expertise is a kind of knowledge-how rather than a knowledge-that, although the boundary between the two is imprecise.⁵⁴ In contrast, Goldman understands *cognitive expertise*, or a cognitive expert, as someone who has a "...superior quantity or level of knowledge in some domain and an ability to generate new knowledge in answer to questions within the domain."⁵⁵

Goldman proceeds by asking what distinguishes a cognitive expert from a cognitive novice or layperson. In order to answer the question, he first distinguishes between two senses of cognitive expertise: objective expertise and reputational expertise. According to Goldman, *objective expertise* is what it is to *be* an expert. This is distinguished from what Goldman calls *reputational expertise*, or merely having the reputation of being an expert. Although, in Goldman's view, reputational expertise naturally follows from objective expertise, the two senses can come apart, and therefore, must be distinguished.⁵⁶

Returning to the initial question of what distinguishes a cognitive expert from a novice, Goldman defines a cognitive expert (in the objective sense) in veritistic or truth-linked terms.⁵⁷

He writes:

⁵³ Ibid., 91.

⁵⁴ Certainly, knowledge-how, or skill expertise, will involve some knowledge-that, or cognitive expertise, and certainly knowledge-that, or cognitive expertise will involve some knowledge-how, or skill-expertise. The difference is a matter of emphasis or degree.

⁵⁵ Ibid.

⁵⁶ Goldman (2001), 91.

⁵⁷ Ibid.

As a first pass, experts in a given domain (the E-domain) have more beliefs (or high degrees of belief) in true propositions and/or fewer beliefs in false propositions within that domain than most people do (or better: than the vast majority of people do).⁵⁸

So, what Goldman means when he says that he understands cognitive expertise in a veritistic or truth-linked sense, is that an expert has more true beliefs and fewer false beliefs relative to the lay person when it comes to the beliefs in the E-domain. An epidemiologist has more true beliefs about epidemiology and/or fewer false beliefs when compared to a novice. The *E-domain*, according to Goldman, are the truths that are only available to experts.⁵⁹ Moreover, the notion of a cognitive expert, is one which is comparative in nature. This seems to suggest at least two things. First, if cognitive expertise is comparative in nature, then cognitive expertise comes in degrees. Second, if cognitive expertise is comparative in nature, and hence, comes in degrees, then the distinction between an expert and a novice is probably not a sharp one.⁶⁰

Goldman admits that the distinction between a cognitive expert and a novice is not a sharp one, yet he doesn't think that cognitive expertise is entirely comparative. What this means is that there is a certain degree of expertise that must be reached to count as an expert, and this is not completely determined by comparing one person with another. He writes that:

To qualify as a cognitive expert, a person must possess a substantial body of truths in the target domain. Being an expert is not simply a matter of veritistic superiority to most of the community. Some non-comparative threshold of veritistic attainment must be reached, though there is great vagueness in setting this threshold.⁶¹

This allows Goldman to avoid the charge that cognitive expertise is simply a matter of being the best of a bad lot. Although Goldman thinks that what it is to be an expert certainly is

⁵⁸ Goldman (2001), 91.

⁵⁹ Ibid., 106.

⁶⁰ Thanks to Tom Senor for pointing out that the distinction between the expert and the non-expert is not a sharp distinction.

⁶¹ Ibid., 91.

comparative in nature, it isn't entirely comparative, because if it were, then as long as someone had more true beliefs and/or fewer false beliefs than everyone else, then he would count as an expert. This would be the case even if the putative expert only believed one true proposition in the E-domain compared to everyone else who did not believe any true propositions in the E-domain. Goldman rightly points out that this can't be correct, and that the person isn't truly an expert.

1.1.2 Cognitive expertise involves a capacity to use expert information to form new beliefs

There are other features mentioned by Goldman of what it is to be a cognitive expert. In addition to having more true beliefs and/or fewer false beliefs within the E-domain compared to others, Goldman also thinks that cognitive experts have what he calls "a capacity or disposition" to deploy the true beliefs and/or fewer false beliefs in forming *new* beliefs in true answers to new questions.⁶²

Goldman understands this capacity or disposition as a kind of skill set which he calls cognitive know-how. *Cognitive know-how* is a set of skills or techniques that constitutes part of what it is to be an expert. The kinds of skills or techniques include the ability to "go to the right sectors of his [the expert's] information-bank" and use that information to "perform appropriate operations on this information." Expertise, in Goldman's view, involves both a propensity element as well as an actual attainment element.⁶³

1.1.3 Cognitive expertise involves an extensive knowledge of primary and secondary questions

In addition to an expert possessing more true beliefs and/or fewer false beliefs in the relevant E-domain compared to others, as well as having a propensity or disposition to deploy

⁶² Ibid.

⁶³ Goldman (2001), 91-92.

that information in forming new beliefs in true answers to new question, Goldman says that an expert has *an extensive knowledge* (a weak sense of knowledge as mere true belief)⁶⁴ of both primary and secondary questions in the relevant E-domain.⁶⁵

Goldman distinguishes between primary and secondary questions in an E-domain. *Primary questions* are principal questions of interest to researchers and students. *Secondary questions* are the existing evidence and arguments that bear on the primary questions as well as knowledge of what other relevant experts think about the state of the evidence.⁶⁶ Here's an example of this distinction. A primary question that concerns physicists is explaining how the universe originated. An example of a secondary question is what scientific theory best explains the data we observe from physics, e.g., big bang, steady state, etc. Secondary questions also concern which scientists endorse those various positions and what their reasons are for holding to those positions. For example, one may point to the observed background radiation waves as evidence of an expanding universe and evidence for an initial big bang at the beginning of the universe.

Next, Goldman distinguishes between two senses of an expert: strong expertise and weak expertise. *Strong expertise* is knowledge of (or mere true belief) both primary and secondary questions. *Weak expertise* is only knowledge of secondary questions, or knowledge of the state of the evidence and what relevant experts think about the state of the evidence. This distinction between strong and weak expertise allows Goldman to distinguish between two putative experts, both of which diverge on answers to the primary questions but only one of them holds mostly true beliefs with respect to the primary questions. Yet both experts have extensive knowledge of

⁶⁴ Ibid., 92.

⁶⁵ Ibid.

⁶⁶ Ibid.

secondary questions such that both are experts in the weaker sense, but only one is an expert in the strong sense.⁶⁷

An example of a person who possesses strong expertise is a physicist at a top research university. The physicist possesses strong expertise because not only does the physicist understand the current state of evidence concerning the discipline of physics, i.e., is knowledgeable of secondary questions, but the physicist also is engaged in cutting-edge research concerning the primary questions of physics. In contrast, an example of a weak expert may be a physics teacher at a high school. They possess knowledge of secondary questions about the current state of the evidence in the discipline, but they aren't engaging in research or know much about the current research projects taking place within the discipline. Another example of a weak expert is a journalist who has a degree in physics and reports on developments in the scientific community, but they aren't engaging in direct research projects like the physics professors.

1.1.4 Summary of Goldman's account

Goldman summarizes what he's said concerning the nature of expertise when he writes the following:

[W]e can say that an expert (in the strong sense) in domain D is someone who possesses an extensive fund of knowledge (true belief) and a set of skills or methods for apt and successful deployment of this knowledge to new questions in the domain. Anyone purporting to be a (cognitive) expert in a given domain will claim to have such a fund and set of methods, and will claim to have true answers to the question(s) under dispute because he has applied his fund and his methods to the question(s).⁶⁸

To conclude, Goldman argues that a cognitive expert is one who (1) possesses more true beliefs and/or fewer false beliefs within the E-domain compared to others. (2) has a capacity to deploy knowledge of that information in forming new beliefs in true answers to new questions and (3)

⁶⁷ Goldman (2001), 92.

⁶⁸ Ibid.

possesses extensive knowledge of both primary and secondary questions and the answers to those questions within the E-domain.

1.2 Brewer's account of expertise

Let's now consider Scott Brewer's account of expertise. In his paper, "Scientific expert testimony and intellectual due process," Scott Brewer (1997-98) gives the following account of expertise.⁶⁹

*An expert is a person who has or is regarded as having specialized training that yields sufficient epistemic competence to understand the aims, methods, and results of an expert discipline. An expert discipline is a discipline that in fact requires specialized training in order for a person to attain sufficient epistemic competence to understand its aims and methods, and to be able critically to deploy those methods, in service of these aims, to produce the judgments that issue from its distinctive point of view.*⁷⁰

Brewer says that an expert is a person who has or is regarded as having specialized training. Here we notice a similar distinction that Goldman makes between actually *being* an expert (in the objective) sense and merely having the reputation of expertise (in Goldman's reputational sense of expertise). So, Goldman and Brewer both make a distinction between actually being an expert and having the reputation of being an expert.

Next, Brewer says that an expert is a person who has specialized training. Specialized training involves an ability to attain sufficient epistemic competence in understanding the aims, methods, and results of an expert discipline. I think we can find analogues for each of these concepts in Goldman's understanding of expertise. For example, we can understand Brewer's notion of specialized training to be analogous to Goldman's notion of cognitive know-how. Just as cognitive know-how involves knowledge of a significant number of truths within the E-

⁶⁹ See Scott Brewer (1997-1998), "Scientific expert testimony and intellectual due process", *Yale Law Journal*, 107:1589 -1681.

⁷⁰ *Ibid.*, 1589.

domain, so too does having specialized training involve knowledge or sufficient epistemic competence to understand the aims, methods, and results of an expert discipline.

It is possible that the specialized training doesn't necessarily take. For example, it's feasible that someone makes it all the way through medical school, or a Ph.D. in physics, yet isn't truly an expert. This could be because they cheated, are overcome by a very strong emotional bias, or made it through the training for some reason other than actual demonstration of competence concerning the discipline. Specialized training is necessary, but not sufficient for expertise. What is needed in addition to specialized training is that the capacity to exercise this set of knowledge and skills is really produced in an individual and the individual is able to exercise this disposition in a reliable way.

The notion of an expert discipline also finds its analogue in Goldman's account: the E-domain. Again, the E-domain, and in this case, Brewer's notion of an expert discipline, involves the set of truths that are accessible only to those with the relevant specialized training.

Last, in addition to possessing sufficient epistemic competence in attaining an understanding of the aims, methods, and results of an expert discipline, Brewer's account incorporates a Goldmanian notion of deploying the knowledge of expert information to arrive at new beliefs and new judgments from the point of view of the expert.

Brewer defines a *non-expert* as follows:

A nonexpert is a person who does not in fact have the specialized training required to yield sufficient epistemic competence to understand the aims, methods, and judgments of an expert discipline, or to be able critically to deploy those methods, in service of the discipline's aims, to produce the judgments that issue from the discipline's distinctive point of view.⁷¹

⁷¹ Ibid.

Here we see that a non-expert is one who isn't an expert. What this means is that a non-expert is simply someone who doesn't possess the specialized training necessary in order to yield sufficient epistemic competence to understand the aims, methods, and judgments of an expert discipline. This seems to suggest that, for Brewer, the notion of expertise is not as fine-grained a notion as Goldman's account. Recall that Goldman makes a distinction between strong expertise and weak expertise. Brewer's account doesn't seem to include any reference to strong or weak notions of expertise.

Although Brewer's account expertise doesn't seem to make a distinction between strong and weak expertise like Goldman's account does, Brewer does mention that the kind of understanding, or epistemic competence, that he thinks experts have and non-experts do not have does come in degrees. Concerning this point, Brewer writes:

Epistemic competence in an expert discipline comes in degrees; it is not an all-or-nothing "switch." This is perhaps not surprising. Is it not a familiar fact that some mathematicians, logicians, physicists, economists, geneticists, and so forth are more skilled at grasping and manipulating the aims, methods, and factual judgments of their respective expert disciplines than are other experts in the same disciplines? Surely Isaac Newton was a more epistemically competent physicist than Isaac Asimov. By the same token, we should recognize that there is no bright line separating expertise from nonexpertise — just as there is no bright timeline or light line separating night from day, even though there is clearly a difference between night and day. Not all experts are equally epistemically competent in their disciplines, nor are all nonexperts equally incompetent with regard to a given expert discipline.⁷²

The idea that expertise comes in degrees will be crucial to my argument in chapter four in which I discuss exactly *how* a non-expert ought to respond to the conversion of an expert.

⁷² Brewer (1997–98), 1593.

1.3 Fricker's account of expertise

Now that we have looked at both Goldman's and Brewer's account of the nature of expertise, let's turn to Elizabeth Fricker's account of expertise.⁷³ In her paper, "Testimony and Epistemic Autonomy," Fricker (2006) offers the following definition of an expert.

S is an expert about P relative to H at t just if at t, S is epistemically well enough placed with respect to P so that were she to have, or make a judgement to form a conscious belief regarding whether P, her belief would almost certainly be knowledge, and she is better epistemically placed than H to determine whether P.⁷⁴

First, Fricker's account of expertise is comparative in nature. An expert is someone who is in a better epistemic position to know P than other knowers. The idea that expertise is a comparative notion is consistent with Goldman and Brewer's accounts of expertise.

Second, Fricker claims that the expert is in a better epistemic position to know that P compared to a person with less expertise or a novice. Additionally, the kind of better epistemic position that the expert is in seems like a dispositional position, or a property intrinsic to the epistemic agent. Consider what Fricker says when she writes the following:

An expertise is, in this lenient sense, *a superior epistemic power* possessed by a person due to her specific differentiating characteristics, such as superior perceptual skills, or specialized field of training and knowledge. Her expertises are *relatively stable properties of a person*, since they are not owed to mere accidents of spatio-temporal location, but are more *deep-seated properties* of that person; some owed to genetic endowment, but many acquired through special training or education.⁷⁵

The expert is more disposed to know P, if the expert believes or makes a judgment about P, than other epistemic agents because of a deep-seated property intrinsic to the expert. Fricker's idea that if an expert were to believe P, then the expert is in a better position to know P than other

⁷³ See Elizabeth Fricker (2006), "Testimony and Epistemic Autonomy", in *The Epistemology of Testimony*, eds Jennifer Lackey and Ernest Sosa, Oxford: Oxford University Press, 225-250.

⁷⁴ Ibid. 233.

⁷⁵ Fricker (2006), 235. Emphases added.

epistemic agents corresponds with Goldman's second condition concerning the capacity of the expert to deploy his specialized information to form new beliefs in true answers to new questions.

1.4 Similarities and differences between the three accounts of expertise

The similarities between the three accounts are the following: Experts possess information and possibly knowledge of a set of truths that non-experts do not possess. Additionally, experts have the capacity or cognitive know-how to use this knowledge to discover and learn new truths. Last, there's an asymmetric comparative epistemic notion between experts and non-experts in which experts are more likely to possess or be able to possess more knowledge than their non-expert counterparts.

The three accounts of expertise don't have, in my mind, significant differences, but the differences that do exist are worth pointing out. First, neither Fricker nor Brewer seem to make mention of Goldman's distinction between primary and secondary questions. I don't think their accounts necessarily exclude this distinction, but I do think it's a helpful distinction to make. All three accounts think that expertise would come in degrees, but it's less clear how Brewer and Fricker can explain how this is the case. Goldman has offered us a way to understand how expertise comes in degrees by making the distinction between knowledge of primary and secondary questions.

1.5 My account of expertise

My account of expertise is broadly Goldmanian with an additional emphasis on the dispositional nature of expert cognitive know-how. I think Goldman is correct in noting that expertise consists in the following three things. (1) An expert has more true beliefs and/or fewer false beliefs within the E-domain compared to others. (2) Cognitive ability to deploy that

information to form new beliefs in true answers to new questions. For this second condition, my account draws from Fricker's account of expertise in thinking that this cognitive capacity is a relatively stable property of the expert. Last, (3) the distinction between knowledge of primary and secondary questions. The distinction provides a principle which we can refer to when demarcating the degrees of expertise. An example of this kind of expertise is similar to the example given earlier concerning the physicist from a research university and the high school physics teacher or science news journalist. The former possesses both knowledge of primary and secondary questions in a reliable sort of way and can generate answers to form new true beliefs to new questions in a generally reliable way. The latter can only do this for secondary questions and cannot really develop new true beliefs to new questions given the information they currently possess. With an account of expertise in hand, let's now turn to discuss the epistemic significance of expertise.

2 Why is expert testimony epistemically significant?

Expert testimony matters because we take ourselves to know things about the world in which we trust the testimony of experts for this knowledge. We take this deference to expert testimony to be legitimate in many instances. Moreover, if we didn't defer to the testimony of experts, we would not actually know many things that we take ourselves to know.

Much of what we believe is based on what others, especially experts, have told us. For example, our knowledge of history, science, and medicine, is almost completely dependent on what experts have told us is the case.⁷⁶ Elizabeth Fricker (2006), writes the following when it comes to our epistemic dependence on the testimony of others:

It is at any rate certain that, in order to live up to the ideal of individual epistemic

⁷⁶ See Jack Lyons and Barry Ward (2018), *The New Critical Thinking: An Empirically Informed Introduction*, New York: Routledge, 246.

autonomy, a very great deal of what is believed by a normal member of a modern society, with its extended division of epistemic labour, would have to be bracketed, given up - most of geography, history, the natural and social sciences including medicine, and so forth.⁷⁷

It's clear that expert testimony is important. Without the testimony of experts, we would lose a great deal of our knowledge of the world. Does our epistemic dependence on experts require blind and uncritical trust in them? Some philosophers answer in the affirmative, others answer in the negative. John Hardwig (1991) represents the former and Fricker (2006) represents the latter.

2.1 Hardwig's blind trust view

In his paper, "The Role of Trust in Knowledge", John Hardwig (1991) argues that our knowledge of many things depends on trust in the testimony of others. This trust in the testimony of others, which includes trust in the testimony of experts, is *blind*.⁷⁸ Hardwig asks us to consider the following strong epistemological principle of testimony:

(T) If *A* knows that *B* knows *P*, then *A* knows *P*.⁷⁹

Let's use an example to illustrate how Hardwig's strong principle of testimony works. Suppose *A* is a well-educated businessman who wants to stay informed about the most cutting-edge climate science. *B* is a well-respected climate scientist and friend of *A*. She tells *A* about her current research and the implications it has for possible effects on the environment. In this scenario, *A* knows that *B* knows *P*, some specialized piece of information only trained climate scientists has access to, and because *B* testifies to *A* that *P*, *A* knows *P*, in virtue of basing his belief that *P* on *B*'s testimony.

⁷⁷ Fricker (2006), 227.

⁷⁸ See John Hardwig (1991), "The Role of Trust in Knowledge", *The Journal of Philosophy*, 88, 12, 693-708.

⁷⁹ *Ibid.*, 699. Cf. Hardwig (1988), "Evidence, Testimony, and the Problem of Individualism-A Response to Schmitt," *Social Epistemology*, 2, 309-21. The principle of testimony was coined by Frederick Schmitt.

Hardwig goes on to explain a particular worry about this view of trust in the testimony of others. He writes:

[I]n order for testimony to be useful, *A* cannot already have *B*'s reasons. So, if *A* accepts *p* on *B*'s say-so, those reasons (*B*'s reasons) which are necessary to justify *A*'s belief are reasons which *A* does not have. Sometimes it is feasible for *B* to share with *A* all the evidence necessary to justify the claim that *p*. But usually not.⁸⁰

One problem that is related to what Hardwig is stating above is the *novice/expert problem*. The problem is that it seems like the novice must blindly trust the expert when the expert testifies that *P*, but this sort of blind trust is epistemically suspect. Hardwig thinks that the only way knowledge in these cases can be preserved is if there is at least some trust in the testimony of experts that is blind. Let's call Hardwig's position the *blind trust position*:

Thus, the blindness of *A*'s knowledge that *p*: those reasons which are necessary to justify *p* (and *A*'s belief that *p*) are reasons which *A* does not have. Obviously, since she lacks part of the evidence that justifies the claim that *p*, *A* is limited in the extent to which she can effectively scrutinize or challenge *B*'s claim about *p*. And yet we are to say that *A* knows that *p*, despite this blindness, this lack of the evidence necessary to justify *p*, this inability to evaluate the case for *p*?⁸¹

The novice must blindly trust the testimony of the expert because the reasons the expert has for testifying that *P* are not available to the novice. If these reasons were available to the novice, then the novice would cease to be a novice and would be an expert. While it's not impossible for the novice to learn the reasons for *P* from the expert, it usually doesn't happen. Moreover, even if the novice was able to learn the reasons for *P* from the expert, they would, at least in some sense of expertise, also be an expert. So, it seems like the only options available to this problem is to either: (1) Have all novices become experts, (2) deny that there is any knowledge via expert testimony, (3) argue that a novice can know *P* only by ignoring the best evidence for *P*, that is,

⁸⁰ Hardwig, 698-699.

⁸¹ Ibid., 699.

ignoring the testimony of an expert who believes P or (4) argue that knowledge belongs to groups of novices but not an individual novice or (5) adopt a blind trust view. The position Hardwig argues for is the *blind trust position*.

Why are the other solutions unlikely? The first option of novices becoming experts, according to Hardwig, is rare. It's not impossible for it to occur, but the idea that every time you don't know something an expert must share with you all of the reasons they have for believing P seems impractical. Additionally, it would require the time and capacity for the novice to understand those reasons the expert has which also seems unlikely and impractical.

Compared to number (1), solution (2) seems more likely. It's the dissolution option which claims that if it is necessary for a novice to possess the same kind of reasons for knowing P that an expert has for knowing P, then there are many things novices don't actually know. Maybe it's possible for the novice to become an expert and then they can know P, but as long as they remain a novice, they cannot merely rely on the testimony of the expert in order to know P. This skeptical option is a viable possibility, but I don't think we should adopt it until there is no other viable solution to the problem.

The third option does not seem plausible either. The best evidence available for knowing P is generally had by the experts in that field of knowledge. Remember our understanding of the nature of expertise. Experts are the epistemic agents who have more true beliefs and/or fewer false beliefs within the E-domain compared to others. The odds are in favor of the expert being the one who possesses the best reasons for knowing that P. Option three is that there is knowledge of P for other reasons than the best reasons or evidence in favor of P. This seems highly unlikely.

Consider, for example, a novice with respect to human anatomy, physiology, and epidemiology, who does not know the reasons experts have for knowing that ‘smoking causes cancer’.⁸² According to option (3), the novice can only know that smoking causes cancer if she ignores the reasons of the experts and comes to knowledge that smoking causes cancer for different reasons. This seems highly implausible. We should not ignore the best reasons for thinking something is true and the best evidence the novice has for believing P is that the expert testifies that P.

The fourth option is the idea that individual novices do not actually know anything via expert testimony, but possibly a group of novices possess shared knowledge. The idea is that an aggregate of novices can combine their knowledge so that they can count as an expert. For example, maybe a sufficient number of undergraduates in biology can pool their collective knowledge concerning the discipline of biology such that a hundred undergraduate biology students can count as an expert in biology.

There are at least two problems with this option. First, the number of novices necessary for knowledge via testimony to occur is vague. How many novices are enough for knowledge via expert testimony to occur? Second, even if there was a principle for determining when a group of novices was large enough for knowledge via expert testimony to occur, option (4) seems to reduce to either option (1) or option (2). If the group of novices becomes large enough to permit the transmission of knowledge via expert testimony, then in a sense, the group has become an

⁸² Eric Funkhouser raises an objection by arguing that the novice does not need to know the specific reasons why smoking causes cancer when knowing the differential rate of cancer to deaths is sufficient to know that smoking causes cancer. I think this is true generally, but often causes in medicine are more complicated and so there are likely cases in which general knowledge of something will not be sufficient for knowing P independent of the testimony of the expert.

expert. You might think that a group of novices could never become large enough to permit the transmission of knowledge via expert testimony such that (2) is true, and no novices actually know anything the experts know.

Hardwig thinks the most plausible option that is not skepticism (option 2) is that the novice knows P via the transmission of knowledge of the expert's testimony through trust in the expert. Hardwig explains what it means for the novice to trust in the expert as follows: First, the novice must know that the expert is *honest*. This means that the novice knows that the expert intends to be telling the truth and believes what she is testifying to. Second, the novice must know that the expert is *competent*. This means that the novice recognizes that the expert "knowledgeable about what constitutes good reasons in the domain of her expertise, and she must have kept herself up to date with those reasons"⁸³ Third, the novice must know that the expert is *conscientious*. This means that the novice recognizes that the expert has been diligent in developing her reasons for believing P. Fourth, the novice must recognize that the expert has an *adequate epistemic self-assessment*, which is to say, the expert is likely not deceiving herself about the extent of her expertise, the reliability of her expertise, or the applicability of her expertise to whether P is true.⁸⁴ This is necessary because it will determine the trustworthiness of the expert's testimony. If the expert begins to pontificate in areas in which she is not an expert, then the expert is less trustworthy. To sum, Hardwig's view is the following:

A must TRUST B, or A will not believe that B's testimony gives her good reasons to believe *p*. And B must be TRUSTWORTHY, or B's testimony will not in fact give A good reasons to believe *p*, regardless of what she might believe about B.⁸⁵

⁸³ Hardwig, 700.

⁸⁴ Ibid.

⁸⁵ Ibid.

According to Hardwig, for transmission of knowledge via expert testimony to occur between expert and novice, it is necessary for the novice to trust the expert and this trust must be blind with respect to the reasons the expert has for believing P. Recall from the passage quoted earlier that Hardwig understands epistemic blindness as such. A is the novice and B is the expert. A novice is blind with respect to knowledge that P when the novice does not have access to the reasons that justify P. Nevertheless, the novice possesses knowledge that P based on the testimony of the expert who does have access to the reasons for justifying P.

2.2 Fricker's critical dependence account of expert testimony

Let us now turn to the view of the transmission of knowledge via expert testimony offered by Elizabeth Fricker, what she calls critical dependence. Fricker acknowledges that we are epistemically dependent concerning a great deal of our knowledge of the world, yet she argues that we should not accept the testimony of others (experts included) uncritically. She writes:

One cannot live in a modern scientifically and technologically sophisticated society, nor have any social life at all, without trusting others in almost one's every action. But this is not to say that one's trust in the vast heritage of knowledge and know-how built up from others' investigations, expertise, and experience must be blind - uncritical and indiscriminating.⁸⁶

Notice that Fricker agrees with Hardwig that in order for us to know many things that we take ourselves to know, we must trust others who are more knowledgeable than us. Yet, Fricker does not think that this trust must be blind. What does she mean by this? Fricker offers the following epistemic principle to help explain her view. She calls the principle the *testimonial deferential acceptance principle 2* or TDAP2. TDAP2 is both necessary and sufficient for a novice to defer to and accept the testimony of an expert. The principle can be stated as follows:

⁸⁶ Fricker (2006), 228.

TDAP 2: One properly accepts that P on the basis of trust in another’s testimony that P — her word that P — just if she speaks sincerely, and she is epistemically well enough placed with respect to P so that were she to have, or make a judgement to form, a conscious belief regarding whether P, her belief would almost certainly be knowledge; and she is better epistemically placed with respect to P than oneself; and one recognizes all these things to be so; and one is not aware of significant contrary testimony regarding P.⁸⁷

Unpacking this principle, we can see that Fricker has similar conditions to Hardwig for novices appropriately trusting experts. A novice may defer to an expert just if the novice judges the expert to be *honest* or *sincere*, in an epistemic position to know P, and in a better epistemic position than the novice in knowing P.⁸⁸ These last conditions seem to roughly correspond with Hardwig’s conditions that the novice must believe that the expert is competent, conscientious, and exhibits an adequate epistemic self-assessment.

Something that is unique to Fricker’s view is the addition of the condition that the novice is not aware of any conflicting testimonial expertise. This builds on Hardwig’s view and will become relevant later in this chapter when we discuss a problem related to the novice/expert problem.

⁸⁷ Ibid., 232. Fricker gives an initial testimonial deferential acceptance principle (TDAP 1) which claims that a necessary condition for epistemically proper deference occurs when the testifier is in a better epistemic position than oneself with respect to knowing P, and that one recognizes that the person testifying is in a better position. Fricker goes on to say that TDAP 1 is not sufficient for epistemically proper acceptance of testimony for at least two reasons. The one accepting testimony must recognize the testifier as being sincere and the one accepting the testimony of the testifier is not aware of any contrary testimony (which includes cumulative non-expert testimony). If these two additional conditions are met, then according to Fricker, we do have necessary and sufficient conditions for epistemically proper acceptance of testimony.

⁸⁸ Fricker says that her position is not entirely externalist. She thinks that there are both internal and external components to epistemically proper deference to experts. The external conditions are (1) the speaker testifies according to her expert generated knowledge and (2) is sincere. The internal condition is that the one accepting the testimony is not aware of reasons for doubting the expertise or sincerity of the expert testifying. See Fricker (2006), 232.

After giving her TDAP-2 principle, Fricker makes an important distinction between two kinds of deferential acceptance. Deferential acceptance is the novice accepting the testimony of the expert. The distinction Fricker makes concerning the notion of deferential acceptance is *weak* versus *strong deferential acceptance*. First, Fricker defines *weak deferential acceptance* as follows:

Weak Deferential Acceptance: occurs when I form belief that *P* on the basis of trust in another's testimony that *P*, when I myself have no firm pre-existing belief regarding *P*; nor would I form any firm belief regarding *P*, were I to consider the question whether *P* using only my current epistemic resources, apart from the current testimony to *P*.⁸⁹

The crucial aspect of weak deferential acceptance is that the novice defers to the testifying expert when the novice has no firm pre-existing belief regarding *P*. For example, I do not have a firm belief about the solution to a complex mathematical proof. If a mathematician were to tell what the answer to the proof is, I would weakly defer to them.

In contrast with weak deferential acceptance, Fricker defines strong deferential acceptance as follows:

Strong Deferential Acceptance: occurs when I let another's trusted testimony regarding *P* override my own previous firm belief, or disposition to form a firm belief, regarding *P*.⁹⁰

The crucial feature that distinguishes strong deferential acceptance from weak deferential acceptance is that in cases of strong deferential acceptance, the novice does have a firm belief or firm disposition to form a firm belief concerning *P* and the novice allows the contrary testimony of the expert to override that previously held firm belief. An example of strong deferential acceptance occurs when a novice who holds to a geocentric model of the universe is told by an expert like Copernicus that contrary to his firm belief that the sun orbits the earth, that what is in

⁸⁹ Fricker (2006), 233.

⁹⁰ Ibid.

fact the case is that the earth orbits the sun. The novice has a firm belief that the sun orbits the earth (possibly based on previous Ptolemaic theorizing, particular interpretations of the Bible, and a common-sense belief that the earth is not moving), yet strongly defers to the testimony of the expert and allows the previous belief to be overridden.

To sum, I think Fricker's position concerning when novices ought to defer to the testimony of experts improves Hardwig's position. Fricker's view includes what Hardwig's view offers by outlining what is necessary and sufficient for trusting experts. Trusting experts involves recognizing or believing that the experts are trustworthy. Experts are trustworthy when they are sincere, competent, conscientious, and make accurate epistemic self-assessments. Fricker's view improves on Hardwig's view, in my estimation, because it provides a more nuanced account. Her account is more nuanced in at least two ways. First, she includes within her principle of testimony the idea that the novice must be unaware of any contrary expert testimony. Second, by distinguishing between weak and strong deference, Fricker has provided a principled way we can say trust in experts is not entirely blind. On Fricker's view, trust in experts is not completely blind, but rather, the trust in experts is critically dependent. It is critically dependent because whether one defers to an expert might depend on how firmly one holds a previous belief and it's possible that some firmly held beliefs may not be overridden by expert testimony.

3 A problem in the epistemology of expertise: Goldman's novice/2-expert problem

Now that we have looked at what expertise is and why it's significant, let's look at a particular problem in the epistemology of expertise. The problem is Alvin Goldman's *novice/2-expert problem*.

3.1 Goldman's novice/2-expert problem

The problem can be understood in the following way: First, suppose that there is a putative disagreement between two experts: expert-1 and expert-2. Next, there is a novice who depends on the testimony of the experts in order to know or be justified in believing propositions within a target domain of information. The target domain of relevant propositions that only experts can adjudicate between is the E-domain. Goldman understands the central question concerning the novice/2-expert problem to be this: can a novice justifiably decide, in a case of two disagreeing experts, which expert is superior in their knowledge of the given domain and the deployment of their knowledge in the domain? Relatedly, on what epistemic basis can the novice do this?

3.2 Possible solutions to the novice/2-expert problem

Goldman offers five possible solutions to the novice/2-expert problem. I will explain each possible solution and briefly discuss why Goldman believes each fails except the last solution. The five possible solutions are the following: the arguments solution, the consensus from other experts solution, the credentials solution, the biases solution, and the past “track-records” solution.

3.2.1 Arguments solution

The arguments solution tries to solve the novice/2-expert problem by having the novice assess the arguments from each of the disagreeing experts. Each expert presents their best case for their position in either a debate format or in a journal. The novice then judges which of the two experts presents the most persuasive case. The problem with this solution, according to

Goldman, is that sometimes novices are able to evaluate the evidence but often the novice is not in the position to adequately evaluate the evidence presented.⁹¹

3.2.2 *Consensus solution*

The second solution Goldman considers is the consensus solution.⁹² The consensus solution solves the problem by having the novice count the numbers on each side of the two disagreeing experts. Whichever expert has the most experts on their side is the position the novice should adopt.

Goldman's objection to this solution is the guru with slavish followers objection. It is possible that either a single guru or a small elite group of experts is slavishly followed by the other experts. If the followers of these leaders more or less uncritically accept the position of the leader, then it seems like counting the number of experts who agree is not as epistemically weighty than it might initially seem. In order to get around the objection, Goldman argues that an additional expert's agreement adds epistemic weight only if the additional expert's agreement is

⁹¹ Goldman, 94. Goldman offers several helpful distinctions in this section. First, he distinguishes between esoteric versus exoteric statements. *Esoteric statements* are statements that belong to the expert's area of expertise and the truth-value of the statements are inaccessible to novices. *Exoteric statements* are statements that are outside the domain of expertise and may be accessible to novices. Second, Goldman distinguishes between semantically esoteric statements and epistemically esoteric statements. *Semantically esoteric statements* are those which are inaccessible to the novice because the novice does not understand the technical terminology. *Epistemically esoteric statements* are those which are inaccessible to the novice in virtue of the novice's inability to assess the truth-value of the statements even if they understand the terminology. Last, Goldman distinguishes between direct and indirect argumentative justification. *Direct argumentative justification* occurs when a hearer becomes "justified in believing an argument's conclusion by becoming justified in believing the argument's premises and their (strong) support relation to the conclusion" (Goldman, 94). *Indirect argumentative justification* occurs when a hearer is indirectly justified in believing the position of someone who is dialectically superior to their opposing interlocutor. Dialectical superiority is not superior debate skill, but the ability to present a putative rebuttal or defeater to the counterevidence provided by their opponent.

⁹² Goldman does not use these names to refer to the putative solutions. They are mine.

formed causally independent from the guru/group of leaders. A belief is formed in a causally independent way according to Goldman in at least two ways. The first way is when the expert X forms their belief in a way that is causally independent of the way expert Y formed their belief. Goldman calls this first way the *bypass route*. An example of the bypass route is when two individuals are direct eyewitnesses to an event. Another example given by Goldman is when two scientists perform independent experiments that bear on some hypothesis.

The second way Goldman thinks an additional expert can form their belief about some hypothesis H in a causally independent way from another expert and thereby provide an evidential boost to the novice based on consensus is the *going-partly-through route*. When an additional expert's belief depends in part on the original experts testimony, but the new expert does not base their belief in H entirely and uncritically on the testimony of original expert, then this route can also count as being causally independent and does in fact provide an additional evidential boost based on the consensus of experts.⁹³ An example of this kind of causally independent route is when an expert E1 posits some hypothesis H and expert E2 listens to E1's reasons for H, considers a variety of defeaters for the reasons for H, and judges that there are more convincing rebuttals to the defeaters, and thereby concurs with E1 in believing H. In the *going-partly-through route* for belief formation, E2's belief in H partly depends on E1's belief in H, but E2's belief is not entirely blind, rather, it is at least in part, causally autonomous.⁹⁴

Goldman's criticism of the consensus solution is the following. First, he thinks that it is possible for the novice, N, to be justified in believing the testimony of experts based on consensus when the consensus heavily favors on position over the other. For example, Goldman

⁹³ Goldman, 102.

⁹⁴ *Ibid.*

would probably believe that the novice is justified in believing the scientific consensus that anthropomorphic climate change actually occurs based on the overwhelming consensus of climate scientists (approximately 97 percent) on the issue. Goldman's worry concerning the solution is that expert disagreement is not always this one-sided. An example of a more divided expert consensus is mammography screenings for women ages 40-49. Miriam Solomon discusses this more nuanced and complicated case of expert disagreement in which some experts suggest that women ages 40-49 should be screened for breast cancer annually while other experts argue that women ages 40-49 should not receive screenings annually.⁹⁵

Cases like the disagreement about mammography screening are the kind that Goldman thinks the consensus view does not solve with respect to the novice/2-expert problem. Which group of scientific experts ought the novice defer to in the case of screening mammography? It is not clear, argues Goldman, so the novice is not justified in believing one position over the based on the testimony of some of the experts in the relevant field.

3.2.3 Credentials solution

Goldman also considers the credentials solution to the novice/2-expert problem. Roughly, the credentials solution appeals to other experts, in this case "meta-experts", who score the expertise of the competing experts. Examples of these kinds of "meta-experts" that evaluate experts are academic degrees, the particular academic institutions, professional accreditations, and so on.⁹⁶ Goldman understands these criteria for evaluating experts as a kind of agreement or consensus with other experts because the academic degrees, institution, professional

⁹⁵ See Miriam Solomon (2015), "Expert Disagreement and Medical Authority", in *Philosophical Issues in Psychiatry III: the nature and sources of historical change*, eds. Kenneth S. Kendler and Josef Parnas, Oxford: Oxford University Press, 64-65.

⁹⁶ Goldman, 97.

accreditations all reflect certifications given to the experts based on the agreement of other experts. If Goldman is correct that the credentials solution is just a specific kind of consensus solution, then the credentials solution is subject to the same problems as the consensus solution. For example, consider again the mammography screening controversy. It is very likely that both sides of the expert disagreement have experts with the highest kinds of credentials on either side. If so, then the novice would not be justified in deferring to one side or the other.⁹⁷

3.2.4 Biases solution

The next solution Goldman considers is what I call the *biases* solution. The biases solution seeks to solve the novice/2-expert problem by looking for biases in the experts and trusting the expert who is less biased. Goldman outlines the following conditional statements as a guiding principle for novices to use when evaluating experts. I will call this the least biased expert principle (LBE).

(LBE) (1) If N has excellent evidence for a bias in one expert E1 and no evidence of bias in the expert's rival E2 and (2) if N has no other reason to trust E1 over E2, then N is justified in placing greater trust in E2.⁹⁸

Goldman walks through a variety of biases that could seriously compromise the testimony of one expert over the other. He considers lying, economic interests, sexism, excluding minority groups, or exaggerating the significance of the evidence in their research in order to receive funding for grants or political agendas.⁹⁹

The problem with this solution is that while some biases are more transparent to the novice such as particular cases of lying or particular cases of economic interests biasing the testimony of the expert, the more subtle forms of bias such as underrepresentation of certain

⁹⁷ Ibid.

⁹⁸ Ibid., 104.

⁹⁹ Ibid., 105.

experts, inflating the significance of the evidence, and entire disciplines subject to bias might be more difficult for the novice to weed out and navigate without becoming an expert.

3.3 Goldman's favored solution: past "track-records"

The fifth solution is Goldman's favored solution. He calls it the past "track-records" solution. The track-records solution to the novice/2-expert problem looks to the expert's track records of cognitive success in order to assess the likelihood of the expert having correct answers to the current issue at hand.¹⁰⁰ In order to defend his favored solution, Goldman considers the following objection:

- (1) A novice can assess the track records of a putative expert only if the novice has epistemic access to the E-domain.
 - (2) A novice by definition does not have epistemic access to the E-domain.
- So,
- (3) A novice cannot assess the track records of a putative expert.¹⁰¹

Goldman responds to this objection to the track records solution as follows: he appeals to the exoteric/esoteric distinction made earlier in the paper in order to reject premise (2). Goldman argues that possibly, not every statement in the E-domain is esoteric (epistemically inaccessible) to the novice. His reason for thinking that possibly some statements in the E-domain are exoteric rather than esoteric, i.e., epistemically accessible rather than epistemically inaccessible, to the novice is to sharpen the exoteric/esoteric distinction by relativizing it to an epistemic standpoint or position.¹⁰²

What Goldman means by sharpening the exoteric/esoteric distinction by relativizing it to an epistemic position is that certain esoteric statements in an E-domain might be esoteric only for a certain period of time and might later become exoteric to the novice. An example Goldman

¹⁰⁰ Goldman, 106.

¹⁰¹ This is my own formulation of the objection Goldman considers.

¹⁰² Goldman, 106.

gives is the following: The statement “There will be an eclipse of the sun on April 22, 2130 in Santa Fe New Mexico.” Relative to novices in the year 2019 this statement is probably esoteric. Possibly, in 2019, this statement is exoteric to scientists. But, relative to novices on April 22, 2130, the statement “There will be an eclipse of the sun on April 22, 2130” is no longer esoteric and the novice can check to see that a certain scientist or scientific position accurately predicted certain truths and then base their beliefs on the scientist or community of scientists who have the better track record.

Goldman notes that there are limits to his solution given that a successful track record may not always be available to the novice at a certain time. For example, in the eclipse prediction given above only those novices who were able to directly observe for themselves the vindication of the scientist’s prediction were able to use the track record solution to resolve the novice/2-expert problem. But suppose that between the years 2019 and 2130 scientists were split with respect to the proposition, “There will be an eclipse in Santa Fe in 2130.” Goldman’s track records would not help any of the novices living in the time between 2019-2130.

3.4 A version of the novice/2-expert problem: Expert conversion

Now that we have seen Goldman’s assessment of the various solutions to the novice/2-expert problem, let’s look at how expert conversion can provide a unique kind of novice/2-expert problem that I believe can shed light on an interesting application of Goldman’s track record solution.

In chapter one I stated that an expert converts or changes their mind when the expert goes from believing P to believing not-P. Consider the following scenario of expert disagreement:

E1 disagrees with E2 in regard to H. The novice knows that E1 used to believe H but now believes not-H and E2 has always believed H. Further, assume that the relevant statements given by E1 and E2 are both esoteric to the novice. Later, the statement becomes exoteric for the novice and vindicates the position of E2.

One may argue that the novice, based on Goldman's track record solution, should always place more trust in E2 than in E1. One may think this for the following reason: When you change your mind you with respect to P you are admitting that you were previously mistaken concerning about P. This would seem, *prima facie*, to undercut your reliability in getting the correct answer with respect to P and other related propositions. Your change of mind may provide a defeater for your testimony that P for the following reason: if you were wrong in the past concerning P why think you will not be wrong in future, or at least less reliable than someone who never flipped on their belief and remained steadfast?¹⁰³

It's possible that the fact that an expert E1 was wrong with respect to P and therefore the novice has some reason for thinking that E1's testimony that P is *unreliable*, I argue that E1's testimony is not unreliable if a number of conditions are met. While it might be correct that all things being equal changing your mind decreases your reliability, this is not always the case. Sometimes, when certain conditions are met, the defeater is overridden by more powerful evidence to the contrary. We will look at some of these conditions in the next chapter that can provide overriding evidence to defeaters when someone changes their mind.

I think the case of expert conversion and the objection of an expert being unreliable in virtue of changing one's mind provides an interesting development of Goldman's track record solution to the novice/2-expert problem. The phenomenon of expert conversion requires a more nuanced development of Goldman's track record solution by highlighting that certain social epistemological problems are not as straight forward as one expert is reliable and the other is not. But rather, using the track record solution is nuanced in such a way that the novice must consider

¹⁰³ Thanks to Jack Lyons and Timothy McGrew for helpful discussions in developing this point.

the multi-dimensional analysis of track record analysis by taking into consideration defeaters, rebuttals to those defeaters, and sensitivity to evidence.

4 Conclusion

Now that we have surveyed the nature and epistemic significance of expert testimony, let's turn to the next chapter in which I discuss the nature and epistemic significance of expert conversion. I will focus on detailing a useful diagnostic for a novice to use when trying to determine whether an expert conversion is epistemically significant while taking into consideration what has already been discussed in the previous two chapters about the nature and epistemic significance of conversion and expert testimony.

Chapter 3: On the epistemic significance of expert conversion

1 Introduction

In this chapter, my task is the following: First, I will ask a central question concerning expert conversion: under what conditions should a novice take the conversion of an expert to be epistemically significant? In chapter one, it was noted that much of what we take ourselves to know about the world depends on the testimony of experts. Another common feature of the world is that people, including experts, change their minds. In addition to changing their minds, experts also disagree with each other. All of these phenomena raise interesting epistemic questions about how we know the things we take ourselves to in fact know. My project is to focus on the particular epistemic questions surrounding the conversion of experts and the effect this has on those who epistemically depend on them for knowledge of the world.

My thesis for this chapter is the following: when experts convert on the basis of evidential reasons, the novice has, under some conditions, defeasible reasons for thinking the converted expert is correct. The reasons the novice has, due to the conversion of an expert, provides the novice with *some* evidence for believing a proposition. Moreover, the novice need not be aware of their propositional justification in order to have it. But, in order to be justified in believing that *p*, or to have *doxastic justification*, the novice does need to be aware that the expert has converted for evidential reasons.

Next, I will give an account of epistemically significant expert conversion. My account provides a useful diagnostic for novices to use when determining whether an expert who has changed their mind should be trusted and to what extent the expert should be trusted. I will provide a list of possible defeaters for the putative epistemic significance of expert conversion. I will address the various empirical contingencies that would undermine the idea that the expert is

converting based on evidential reasons. Last, I will give an example of what I call positively epistemically significant expert conversion and examples of negatively significant expert conversion. These examples will be used to demonstrate how my account can be used in practice.

2 A central question

A central question for my project is the following: *When* should a novice take the conversion of an expert to be epistemically significant? To clarify possible confusion, when I refer to ‘an account of the epistemic significance of conversion’ what I am focused on is this question. My account concerns this particular question — not the more general question concerning any kind of epistemically significant expert conversion.

In order to properly answer the question, the concepts of *expert consensus* and *expert conversion*, should be defined. Following Boaz Miller (2013), I take expert consensus to be the following:

Expert Consensus: Expert consensus occurs when a proposition *p* is collectively accepted as true by a majority of experts in a relevant domain of expertise.

Expert consensus occurs at the level of the belief of a group.¹⁰⁴ Moreover, following Margaret Gilbert (2002), I will adopt *a non-summative account of group belief* in which a group *g* believes *p* just in case the members of *g* are jointly committed to believing that *p as a body*.¹⁰⁵ Each member of the group need not explicitly believe *p* in order for them to count as a member within the consensus. A consensus can be understood in terms of the beliefs of a community.

Concerning the beliefs of a community, Linda Zagzebski (2012) writes:

¹⁰⁴ See Boaz Miller, Boaz (2013), “When is consensus knowledge based? Distinguishing shared knowledge from mere agreement”, *Synthese*, 190: 1296.

¹⁰⁵ See Margaret Gilbert (2002), “Belief and acceptance as features of groups”, *Protosociology*, 16, 42.

The beliefs of a community cannot be identified with the beliefs of any one individual member, and the goal of truth for the community is not the same as the goal each member of the community has to get truth for herself. The community sometimes expresses these beliefs as assertions. We see this in scientific communities (“We teach evolution”), communities of historians (“We know very little about the early life of Charlemagne”) ...¹⁰⁶

Miller gives the following definition of joint commitment: The experts in the relevant group are jointly committed to p when (1) they let p stand as the position of the group, (2) they endorse p when participating in group activities, and (3) publicly defend p when acting as a representative of the group.¹⁰⁷

Any particular member of the group may simply *accept* P, rather than *believe* P. Miller offers a number of differences between accepting P and believing P. First, “taking it [p] for granted in one’s reasoning” which can occur without believing P. Another difference is that acceptance involves considering one’s goals whereas beliefs do not always take the agent’s goals into consideration. Third, acceptance is voluntary, whereas beliefs are usually not. Fourth, there are feelings associated with believing something is true whereas accepting that something is true does not always have the same associated feelings.¹⁰⁸ For the purposes of my argument, in order for an expert’s conversion to count as epistemically significant, the expert must actually believe, and not merely accept P. The distinction between belonging to a community of experts and merely accepting P and belonging to a community of experts and believing P will be important later on when discussing the epistemic significance of particular expert’s conversion.

Bradley Monton (2008), explaining the views of Bas van Fraassen, writes the following about acceptance:

¹⁰⁶ See Linda Zagzebski (2012), *Epistemic Authority: A Theory of Trust, Authority, and Autonomy in Belief*. Oxford: Oxford University Press, 154.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

Acceptance has both an epistemic and a pragmatic component. When one accepts a theory, one has a belief, and also a commitment. The belief is that the theory is empirically adequate. The commitment is “a commitment to the further confrontation of new phenomena within the framework of that theory, a commitment to a research programme, and a wager that all relevant phenomena can be accounted for without giving up that theory” (1980, 88). According to the constructive empiricist, this commitment is made at least in part on pragmatic grounds: there is an important role for non-epistemic values in theory choice (van Fraassen 2007, 340).¹⁰⁹

What are some of the non-epistemic, or pragmatic reasons, that inform theory choice? They include reasons such as: (1) an agent may lack a better theory or (2) an agent may find a certain theory is easier to work with or (3) the theory helps to further the goals of the group.

Concerning the idea of the majority of experts accepting a proposition, consensus is possible without complete agreement. I don't know where the cut-off would be for something to no longer count as a consensus, but it seems like there are instances of consensus in science, even if they are not endorsed by one hundred percent of the scientific community. For example, approximately ninety-seven percent of publishing climate scientists endorse the thesis that humans are causing global warming.¹¹⁰ I take this to be an example of scientific consensus.

Having discussed expert consensus, let us turn to expert conversion. I take expert conversion to at least entail the following:

Expert Conversion: Expert conversion occurs when an expert goes from believing/accepting not-*p* to believing/accepting *p* or vice versa.

¹⁰⁹ See Bradley Monton (2008), “Constructive Empiricism”, in *The Stanford Encyclopedia of Philosophy*, <https://plato.stanford.edu/entries/constructive-empiricism/#EmpiAdeq>. Thanks to Eric Barnes for pointing out how Miller's understanding of acceptance is very similar to van Fraassen's. See Bas van Fraassen (1980), *The Scientific Image*, Oxford: Oxford University Press and “From a View of Science to a New Empiricism” in Bradley Monton (ed.) (2007), *Images of Empiricism: Essays on Science and Stances, with a Reply from Bas C. van Fraassen*, Oxford: Oxford University Press.

¹¹⁰ See John Cook *et al* (2016), “Consensus on consensus: a synthesis of consensus estimates on human-caused global warming”, *Environmental Research Letters*, 11, 048002, 1.

The expert is a member of an expert group in which the group believes p and qua member of the group, the expert accepts that p, even if they do not believe p.¹¹¹ For an expert to count as a member of an expert community, they must be recognized by other members of the community as a legitimate member of the group. With expert consensus and expert conversion defined, let us turn to my account of the epistemic significance of expert conversion for a novice.

3 When should the novice take the conversion of an expert to be epistemically significant?

A novice should take the conversion of an expert to be epistemically significant when they think the following conditions obtain. The best explanation of the expert's conversion is that the expert is responding to evidence. The expert is responding to evidence when four conditions obtain. The expert is committed to the same schema and frameworks of other experts and the conversion seems based on evidential reasons. Additionally, the expert seems unbiased, and the expert continues to be reliably making successful predictions. We shall look at each of the conditions in more detail later in this chapter.

My account is not a set of necessary and sufficient conditions of when expert conversion is and is not epistemically significant but should be understood as more of a rough diagnostic for the novice to use when making epistemic judgments.¹¹² I model my account of the epistemic significance of expert conversion after Boaz Miller's account of knowledge-based consensus. I will present Miller's account first and then present my account. After presenting my account, I will discuss how my account is similar to Miller's as well as how my account differs from his.

Miller's account of knowledge-based consensus

¹¹¹ I think that by accepting p an expert does not believe not-p. I don't see how this acceptance that p and believing not-p are compatible.

¹¹² Tom Senor helped me make this point clearer.

Boaz Miller (2013) gives an account of knowledge-based consensus of experts. Miller's account helps to distinguish between shared knowledge from mere agreement. Miller argues that we may legitimately defer to the testimony of expert consensus when the expert consensus is likely to be knowledge-based. According to Miller, expert consensus is likely knowledge-based when knowledge is the best explanation of the consensus. Knowledge is the best explanation of the consensus when the following conditions obtain.

- a. *The social calibration condition* – all parties to the consensus are committed to using the same evidential standards, formalisms, and ontological schemes.
- b. *The apparent consilience of evidence condition* – the consensus is based on varied lines of evidence that all seem to agree with each other.
- c. *The social diversity condition* – the consensus is socially diverse.¹¹³

Miller argues that if all of these conditions obtain then we may legitimately epistemically defer to the testimony of the expert consensus.¹¹⁴ Let us look in more detail concerning what Miller says about each of the three conditions. After discussing Miller's three conditions, I'd like to add a fourth condition based on the predictive power of the consensus.

*The social calibration condition*¹¹⁵

Miller cites Kuhn (1970) when explaining what he means by the social calibration condition. Miller argues that for this condition, all of the experts need to "...share the same fundamental background assumptions."¹¹⁶ Kuhn has three types of objects necessary for genuine

¹¹³ Miller (2013), 1294. The experts come from different backgrounds.

¹¹⁴ Miller does not explicitly address the question of whether his account provides a sufficient condition of rational deference or whether his account merely provides a condition of when we may rationally defer but remain rational if we didn't defer. I think he takes his account to be the latter.

¹¹⁵ Miller takes the phrase 'social calibration' from Sandy Goldberg (2007). Miller summarizes Goldberg's understanding of social calibration as a condition where "...a great overlap in the meaning of lexical terms between the idiolects of members of a speech community is necessary for satisfying the conditions on successful transmission of knowledge through testimony." See Miller (2013), 1301.

¹¹⁶ Miller, 1301.

agreement or consensus to occur.¹¹⁷ The reason a shared commitment to background assumptions is a condition for knowledge-based consensus is because in order for there to be substantial consensus and not superficial agreement there must be a shared minimal content. The social calibration condition seeks to provide this shared minimal content.¹¹⁸

The three conditions necessary for consensual meta-agreement are shared formalisms, ontological schemes, and evidential standards.¹¹⁹

Shared formalisms include things such as $f = ma$ in Newtonian physics or $P V = nrT$ for the ideal gas law. This means that there needs to be at least a minimum threshold of shared formalisms between experts such that there can be some sense in which it can be said that they agree with each other. If the formalisms used by different experts are so radically different from each other that they cannot be compared to each other, then it is difficult to see how one could argue that there is a consensus among experts. *Ontological schemes* include descriptions or models of the world such as matter is composed of particles.¹²⁰ *Evidential standards* are model solutions that show how to apply the formalisms and how to solve specific problems and define what solutions are acceptable.¹²¹

Keith Lehrer and Carl Wagner (1981) also argue that a shared commitment to a similar methodology is necessary for scientists to reach a rational consensus. Lehrer and Wagner write:

Our contention is...that scientists must also be consensually committed to a method. If they are not so committed, then, no matter what the intrinsic merits of the method, agreement is not to be expected. Again, if one is not rationally committed to a method, then one is not committed to the results obtained, no matter how constant and consistent

¹¹⁷ See Thomas Kuhn (1970), *The Structure of Scientific Revolutions* (Second Edition), Chicago: The University of Chicago. 182-191. Cf. Miller 1301.

¹¹⁸ Thanks to Eric Barnes for seeking clarification on this point.

¹¹⁹ Kuhn refers to shared formalisms, ontological schemes, and evidential standards as symbolic generalizations, metaphysical models, and exemplars, respectively.

¹²⁰ Miller, 1301.

¹²¹ Ibid.

those results might be. History bears this out. When others looked through Galileo's telescope, they did not by any means agree that the moons of Jupiter were there to be seen...When we claim that the results of science are rational, when we prefer those results to prejudice and superstition, the rationality of our claim rests ultimately upon our agreement, our consensus, that those methods lead us to truth or at least expose error in a reliable way. The application of method may itself produce agreement, but such agreement presupposes a prior consensual commitment to the methodology itself.¹²²

Here we see that Miller, Lehrer and Wagner agree that a shared commitment to formalisms, methodology, ontological schemas, and evidential standards are important features for expert consensus to obtain.

Miller goes on to make an important distinction when discussing shared formalisms. He distinguishes between essential consensus and accidental consensus. *Essential consensus* occurs when "...a group forms a collective decision for the same thing using shared standards of evidence and a sense of relevance." On the other hand, an accidental consensus occurs when "...each individual forms the same belief on her own and for her own reasons."¹²³ He thinks that only essential consensus can be knowledge-based. Later in this chapter, when discussing my view of expert conversion, I'll offer an analogue to Miller's essential versus accidental distinction.

The apparent consilience of evidence condition

Miller offers the following criticism of Goldman. Goldman argues that for an expert's opinion to provide more weight than the weight given to the opinion of the consensus the opinions must have been arrived at in a *causally independent* way. Goldman's thought is that if a group blindly follows a guru, then the fact that many people believe p gives us no more reason to

¹²² See Keith Lehrer and Carl Wagner (1981), *Rational Consensus In Science and Society: A Philosophical and Mathematical Study*, Dordrecht: D. Reidel Publishing Company, 8-9.

¹²³ Miller, 1302.

believe p is true than our reasons for thinking p is true on the testimony of the guru alone.¹²⁴ Goldman thinks that an additional person, X, only confers additional weight for believing p, in addition to the expert, call them Y, believing p, if X and Y form their beliefs in causally independent ways. An example of forming the same beliefs in causally independent ways would be if X formed their belief based on different experiments or eyewitness testimony apart from the testimony of Y.

Miller offers the following criticism of Goldman's causal independence thesis. While Goldman's idea that beliefs must be formed in causally independent ways in order for them to confer additional warrant on top of the testimony of an expert, Goldman's thesis runs contrary to the common practice of drafting expert consensus statements and ignores the evidence that suggests groups, because they divide cognitive labor, can more effectively reach more warranted results than individuals.¹²⁵ A third criticism offered by Miller against Goldman's view is that 'causally isolated agents' may reach the same conclusion for different and incoherent reasons which would violate the social calibration condition.¹²⁶

Miller's account of the second condition, the apparent consilience of evidence, is based on *the robustness principle*. Robustness, according to Jacob Stegenga (2009), is the idea that "hypotheses are better supported with plenty of evidence generated by multiple techniques that rely on different background assumptions."¹²⁷ Miller applies the robustness principle to the social context arguing that "when a consensus is built on an array of evidence drawn from a

¹²⁴ See Goldman (2001), 98. Cited in Miller (2013), 1304.

¹²⁵ Miller (2013), 1304.

¹²⁶ Ibid.

¹²⁷ See Jacob Stegenga (2009), "Robustness, discordance, and relevance", *Philosophy of Science*, 76 (5), 650. Cf. Miller (2013), 1309.

variety of techniques and methods, it is less likely to be an accidental by-product of one technique - and all the more likely to be knowledge based.”¹²⁸

Miller’s reason for only requiring *apparent* consilience of evidence over *actual* consilience of evidence is because the latter is too demanding. Miller gives a number of reasons for thinking that actual consilience of evidence is too demanding, and that apparent consilience of evidence is the best that we can hope for. These reasons include: first, “different methods [for combining and weighing different lines of evidence] and different implementations of the same method may give different outcomes for the same body of evidence.”¹²⁹ Second, supposing that there was only one way of combining and measuring evidence, it would be question-begging to think that consensus is knowledge-based because the one method enjoys wide consensus. Third, some of the best theories of evidential support, e.g., Bayesianism or IBE, leave at least some room for an element of subjectivity. Hence, at least part of our informed judgements are going to be determined by an agent's social-situatedness.¹³⁰

The social diversity condition

The last condition for knowledge-based consensus to obtain is the social diversity condition. Miller understands the social diversity condition in the following way: first, he asks us to recall the robustness principle mentioned for the apparent consilience of evidence condition. When robustness, that is, “the notion that hypotheses are better supported with plenty of evidence generated by multiple techniques that rely on different background assumptions” is applied to the social context, the multiple background conditions in the robustness principle are

¹²⁸ Miller, 1309.

¹²⁹ Miller (2013), 1310.

¹³⁰ *Ibid.*, 1310-1311.

usually understood as social diversity.¹³¹ Concerning a diversity of perspectives, Longino writes that a “diversity of perspectives is necessary for a vigorous and epistemically effective critical discourse... When consensus exists, it must be the result ... of critical dialogue in which all relevant perspectives are represented.”¹³²

Let’s distinguish between epistemically significant social diversity and epistemically insignificant social diversity. In cases of epistemically insignificant social diversity, what unites a group of people does not, or could not, confer additional evidential import. For example, the fact that a group of scientists lack a person with red hair in their community is epistemically insignificant when it comes to scientific research. There’s nothing about having red hair that provides an epistemic agent with any additional evidence in scientific inquiry. In contrast, epistemically significant social diversity occurs when what unites a group of people does, or could, confer evidential import. An example of epistemically significant social diversity could be including women within the scientific community. There is, or could possibly be, something about the fact of being a woman that provides the scientist with additional evidential import not available to her male colleagues. This doesn’t mean that if a consensus is not socially diverse it cannot in principle be knowledge-based. Rather, a consensus is less likely to be knowledge-based when it isn’t socially diverse.

My account of epistemically significant expert conversion

Before offering my account of *when* expert conversion is likely to be epistemically significant, I’ll offer an argument for thinking that expert conversion in general is epistemically significant. Consider the following argument.

¹³¹ Ibid., 1311.

¹³² See Helen Longino (2002), *The fate of knowledge*, Princeton: Princeton University Press, 131. Cited in Miller (2013), 1311.

- (1) If some expert consensus is likely to be knowledge-based, then some expert consensus is likely to be epistemically significant. [Premise]
- (2) Some expert consensus is likely to be knowledge-based. [Premise]
- (3) Therefore, some expert consensus is likely to be significant. [MP 1,2]
- (4) If some expert consensus is likely to be significant, then some expert conversion is likely to be significant. [Premise]
- (5) Therefore, some expert conversion is likely to be epistemically significant.¹³³ [MP 3,4]

Let's consider reasons for thinking (1), (2), and (4) are true. Concerning the truth of (1), if something is known, then it is sometimes epistemically significant. If an expert knows that P, then the expert's belief satisfies whatever is epistemically necessary and sufficient for knowledge. Knowledge is one feature that makes a belief epistemically significant. So, if an expert does in fact know P, then their belief is epistemically significant.¹³⁴ (2) depends on whether expert consensus can be knowledge-based in an epistemic sense. It's intuitive to think that expert consensus can be knowledge-based even if we are still working out how it's knowledge-based. One reason for thinking consensus is knowledge-based is because if it's not then there is probably a lot less knowledge in the world than we seem to think.¹³⁵ Last, the claim that some experts who change their minds disagree with the consensus is simply a descriptive claim. Hence, it seems like this is a good argument for thinking that expert conversion can be epistemically significant. An expert conversion is epistemically significant when the following

¹³³ Thanks to Eric Barnes for pointing out this argument to me.

¹³⁴ I am not going to argue whether the expert must have access to the basis that supports their belief. I think my discussion about expert conversion is orthogonal to the internalist/externalist debate. For discussion on the value of knowledge which I take epistemic significance to fall under, see Jonathan L. Kvanvig (2003), *The Value of Knowledge and the Pursuit of Understanding*, Cambridge: Cambridge University Press.

¹³⁵ I know this is a defeasible defense of why one may think that consensus is not knowledge-based in an epistemic sense. My purpose is not to defend in a robust way whether consensus is knowledge-based. I think Miller makes a good case that it can be. Rather, I am simply motivating the intuition that it's *prima facie* plausible to think the consensus is knowledge-based given our widely assumed practice that it is.

conditions are satisfied and epistemically insignificant when the conditions are not satisfied. The conditions are the following:

Let EC stand for an expert conversion, ES stand for epistemically significant, and EB stand for evidence based.

An EC is ES iff:

(1) The EC is EB.

An EC is EB if:

(2a) *Social calibration condition* – when the expert converts, they are committed to using the same evidential standards, formalisms, and ontological schemes as the other experts in the debate.¹³⁶

(2b) *Appearance of evidence* – the expert seems to be converting on the basis of evidence.

(2c) *Absence of cognitive biases* – the expert doesn't seem to have any cognitive biases that would better explain the conversion.

(2d) *The expert makes reliably successful predictions and successful track-record*- the converting expert makes successful novel predictions based on their new view and has been reliable in the past.

Differences between Miller's account and my account

My account is similar to Miller's account in that both of our accounts are inferences to the best explanation. My account differs from Miller's in that my account concerns expert conversion whereas Miller discusses expert consensus. Second, my account focuses more on the individual expert who changes their mind, rather than the group of experts. In discussing the epistemic significance of the conversion of an expert, I must discuss the context in which they are converting, but my account focuses more on the individual than Miller's account does.

¹³⁶ See Sanford Goldberg (2007), *Anti-Individualism: Mind and language, knowledge and justification*, Cambridge: Cambridge University Press, 61. Cited by Miller (2013), 1301.

4 Defeaters for epistemically significant expert conversion

In this section, I'll consider ways in which conversion based on evidential reasons could be defeated. Specifically, I will consider ways in which empirical contingent factors can undermine the evidential significance of an expert's conversion.

In order to outline possible defeaters for the epistemic significance of expert conversion, I think it's helpful to discuss the distinctive attributes of experts. What attributes distinguishes experts from non-experts? Consider the following.

Experts are influential. Experts enjoy a certain level of influence and prestige in virtue of their role as an expert. It seems possible that experts might be more susceptible to particular biases of overconfidence in virtue of their influence and prestige. The primary way in which experts are influential is that their testimony carries more epistemic weight than the non-expert.¹³⁷

Experts' jobs depend on their views. Experts are vulnerable to motivated reasoning because often their jobs depend on whether they publish. It is possible that experts can be tempted toward exaggerating results or fudging numbers in order to keep their jobs. It would be significant if an expert changed their mind when they didn't have much to gain but much to lose.

Experts receive their status and influence based on their cognitive abilities. Given that expert's prestige and job security depend at least in part on their cognitive abilities, the credibility and reliability of those cognitive faculties carry more weight for experts than a novice. If an expert were to demonstrate that they are not cognitively credible or reliable, then it seems, *ceteris paribus*, the expert has more to lose than a novice.

¹³⁷ These conditions are not necessary for being an expert but are a loose characterization of contingencies associated with being an expert. Thanks to Tom Senor for helping me clarify this point.

*Kinds of biases in which experts are susceptible*¹³⁸

First, experts can succumb to *hypothesis myopia*. Hypothesis myopia occurs when experts fixate on a particular hypothesis, don't consider evidence against the hypothesis, and don't consider alternative hypotheses.

Second, experts can succumb to the bias of *the Texas sharpshooter*. This bias is akin to a 'sharpshooter' who fires random bullets and then draws his target around the shots. In a similar way, researchers can selectively report the hypotheses that worked or to hypothesize after the results are known. It is not intrinsically biased to develop a hypothesis after the data has come in but there are instances in which it is biased to do so. For example, Ruzzo cites a study about p-hacking in psychological research. Researchers will, either consciously or unconsciously, select biased hypotheses and data that render statistically significant p-values, i.e., $p < 0.05$.

P-hacking occurs when researchers will either only report studies that "worked" and not report the studies that didn't work, will peek at the results and decide whether they should collect more data, or throw out data only after checking its impact on the p-value.¹³⁹

Third, experts can exhibit *asymmetric attention*. This bias is also known as the disconfirmation bias and occurs when experts rigorously analyze unintuitive results but give a 'free-pass' to expected results. An example of this kind of bias that scientists can succumb to is exemplified in a 2004 study cited by Ruzzo in which eighty-eight percent of a sample of molecular-biology labs reported that when an experiment yielded an unexpected conclusion the researchers explained the unexpected results on inconsistencies with how the experiments were

¹³⁸ See Regina Nuzzo (2015), "How scientists fool themselves – and how they can stop", *Nature*, <https://www.nature.com/news/how-scientists-fool-themselves-and-how-they-can-stop-1.18517>.

¹³⁹ Ruzzo (2015) and John K. Leslie, George Loewenstein, and Drazen Prelec (2012), "Measuring the Prevalence of Questionable Research Practices With Incentives for Truth Telling", *Psychological Science*, Vol. 23, Is. 5, 524-532.

conducted rather than on their theory. When a result was consistent with their theory, the scientists didn't question the experimental methodology.¹⁴⁰

Fourth, experts can fall prey to *just-so story telling*. Just-so story telling are instances of fallacious post hoc rationalizations that scientists can engage in in order to reach the sort of explanations and interpretations that they want. The problem with just-so story telling is that it can be used to justify or rationalize any explanation which are often contradictory explanations.¹⁴¹

Fifth, experts, who are generally very intelligent, may be more susceptible to certain cognitive biases.¹⁴² In their paper, Keith Stanovich, Richard West, and Russell Meserve (2012) show that cognitive sophistication, something presumably had by many experts, does not attenuate the bias blind spot. Stanovich et al. write the following:

[M]ore cognitively sophisticated participants showed *larger bias blind spots*... a conservative way to characterize the findings here is to say that cognitive ability provides no inoculation at all from the bias blind spot—the tendency to believe that biased thinking is more prevalent in others than in ourselves. In our data, cognitive ability did not attenuate the tendency toward a blind spot at all. Thus, the bias blind spot joins a small group of other effects such as myside bias and noncausal base-rate neglect (Stanovich & West, 2008b; Toplak & Stanovich, 2003) in being unmitigated by increases in intelligence (emphasis added).¹⁴³

What Stanovich et al. conclude from their study is that contrary to what might be expected, more intelligent people were not less biased. They offer a variety of explanations for why this might be the case. What is interesting for our purposes is that experts, in particular, scientific experts, are

¹⁴⁰ See Fugelsang, J. A., Stein, C. B., Green, A. E., & Dunbar, K. N. (2004), "Theory and data interactions of the scientific mind: Evidence from the molecular and the cognitive laboratory," *Canadian Journal of Experimental Psychology*, 58(2), 86–95.

¹⁴¹ Nuzzo (2015).

¹⁴² See Keith E. Stanovich, Richard F. West, and Russell J. Meserve (2012), "Cognitive Sophistication Does Not Attenuate the Bias Blind Spot", *Journal of Personality and Social Psychology*, Vol. 103, No. 3, 506–519.

¹⁴³ *Ibid.*, 515.

probably on the whole, intelligent, nevertheless, they are just as susceptible to certain biases like everyone else.

J.D. Sterman (2011) also support the claim that experts are no less susceptible to biases than others. He writes the following:

We violate basic rules of probability and do not update our beliefs according to Bayes' rule. We underestimate uncertainty (overconfidence bias), assess desirable outcomes as more likely than undesirable outcomes (wishful thinking) and believe we can influence the outcome of random events (the illusion of control). We make different decisions based on the way the data are presented (framing) and when exposed to irrelevant information (anchoring). We credit our personal experience and salient information too highly and underweight more reliable but less visceral data such as scientific studies (availability bias, base rate fallacy). We are swayed by a host of persuasion techniques that exploit our emotions and our desire to avoid cognitive dissonance, to be liked, and to go with the crowd... *Scientists and professionals, not only "ordinary" people, suffer from many of these judgmental biases* (emphasis added).¹⁴⁴

It's well supported that experts are not free from bias. Nevertheless, I don't think this should necessarily lead us to skepticism. It means novices must become more epistemically discerning when it comes to trusting experts. For now, I'll leave the rest of that discussion for the next chapter.

5 An example of epistemically significant expert conversion

The example I'll use from the history of science is the shift from the Ptolemaic model of the universe to the Copernican model of the universe. Within the history of science, this shift is often referred to as the "scientific revolution."¹⁴⁵ In order to explain why I use this case as an example of expert conversion, let me give a brief background about the debate.

¹⁴⁴ J.D. Sterman. (2011), "Communicating Climate Change Risks in A Skeptical World", *Climatic Change*, 08: 816.

¹⁴⁵ See Timothy McGrew, Marc Alspector-Kelly, and Fritz Allhoff, eds. (2009), *Philosophy of Science: An Historical Anthology*, Wiley-Blackwell, 95.

The scientific revolution occurs between 1543 with the writing of Copernicus' *On the Revolutions of the Heavenly Spheres* and 1687 with the writing of Newton's *Principia Mathematica*.¹⁴⁶ The revolution occurred with a shift in models of the universe from Ptolemy's geocentric model to Copernicus' heliocentric model of the universe.

In his work, *Almagest*, Ptolemy argues that the earth is spherical, that the size of the earth in relation to its distance to the stars is negligible, and most famously, that the earth does not move.¹⁴⁷ Ptolemy builds his model of the universe with little circles called *epicycles* that ride on other circles called *deferents*. With this model, Ptolemy is able to predict the locations of the planets very accurately in the night sky and is also able to account for the phenomena of retrograde planetary motion.¹⁴⁸ Retrograde planetary motion is an optical illusion in which a planet will seem to be moving backwards against the stars.¹⁴⁹ Ptolemy's model can account for the phenomena of retrograde motion, but not in a non-arbitrary manner. The sizes of the radii of the circles within Ptolemy's model could have been a different size, and in some cases, the sizes of the radii he uses for the moon are different for different purposes.¹⁵⁰ On Ptolemy's model, you can build pieces of his system, but you cannot build the entire model because one model would contain incompatible parts.

Copernicus found the predictive success of Ptolemy's model commendable, but the fact that Ptolemy's system contained arbitrary orbital distances and contained incompatible pieces to the model, led Copernicus to reject Ptolemy's model, and to develop his heliocentric model.

¹⁴⁶ Ibid.

¹⁴⁷ Ibid., 18.

¹⁴⁸ McGrew, Kelly, Allhoff (2009), 18.

¹⁴⁹ Ibid, 96.

¹⁵⁰ Ibid, 18. In the case of the moon, Ptolemy uses one size of the radii for the computation of the moon's visible size and another radii size for the computation of the moon's motion.

Copernicus began the development of his heliocentric model with the assumption that the Earth is just like all of the other planets. On Copernicus' heliocentric model, retrograde motion can be explained in a non-arbitrary way. By supposing that the earth is just like all of the other planets and that all of the planet orbit around the sun, Copernicus can both explain retrograde motion and do so in a principled way.

Copernicus can account for the phenomena of retrograde motion as follows. On a heliocentric model, the earth is on a shorter orbit (on the inside track) with respect to the inside planets (Mars, Jupiter, and Saturn). Because of this, Earth, given that it's on the inside track, will 'lap' Mars, Jupiter, and Saturn. A result of this lapping will cause Mars, Jupiter, and Saturn to seem to be moving backwards with respect to the stars. The seeming backwards motion is illusory. This is explained by Copernicus geometrically. According to his model, the further away a superior planet (Mars, Jupiter, Saturn, Uranus, Neptune) is, the smaller its retrograde motion will be.¹⁵¹ Copernicus was able to do with his heliocentric model what Ptolemy could not, that is, provide a non-arbitrary explanation of the phenomena of retrograde motion.

The Case of Georg Rheticus

Georg Rheticus (1514-1574) was an Austrian born mathematician and astronomer. Rheticus studied under his teacher Schoner who also held to the Ptolemaic model. In 1539, Rheticus travelled to Poland in order to determine if the new Copernican model of the solar system had any plausibility. Within four months, Rheticus was a complete convert to the Copernican view.¹⁵²

¹⁵¹ McGrew, Kelley, Allhoff (2009), 96.

¹⁵² Ibid., 108.

A few quotations from Rheticus will help provide insight into his reason for converting.

He writes:

For all these phenomena appear to be linked most nobly together, as by a golden chain; and each of the planets, by its position and order and every inequality of its motion, bears witness that the earth moves and that we who dwell upon the globe of the earth, believe that the planets wonder in all sorts of motions of their own.¹⁵³

Rheticus is addressing his former teacher, Schoner, explaining that the Copernican model provides an explanatorily powerful account of the motion of planets. Still writing to his teacher, Schoner, Rheticus remarks that:

I [Rheticus] sincerely cherish Ptolemy and his followers equally my teacher, since I have in mind and memory that sacred precept of Aristotle, “We must esteem both parties but follow the more accurate.”¹⁵⁴

In his work, *The Nature and Grounds of the Copernican System*, Rheticus is painstaking in explaining to his teacher Schroner his reasons for converting to the Copernican view.

The response to Copernicus’ View

The response to Copernicus’ view was not immediate acceptance. For at least two generations, scientists wrestled with Copernicus’ idea. The reception of Copernicus’ view was mixed.¹⁵⁵ One reason why Copernicus’ view wasn’t immediately received is that Copernicus’ view was not as parsimonious as Ptolemy’s. Copernicus’ view posited two centers for celestial motion (planets orbit the sun and the moon orbits the earth). Whereas Ptolemy’s account only posited one center for celestial motion (everything orbits the earth).¹⁵⁶

While Copernicus’ view is a more unified account of celestial motion, some scientists were not convinced because Ptolemy’s account was simpler. This made it difficult for one side to

¹⁵³ Ibid.

¹⁵⁴ McGrew, Kelly, and Allhoff (2009), 109.

¹⁵⁵ Ibid., 98.

¹⁵⁶ Ibid., 97.

fully convince the other. McGrew, Kelly, and Allhoff (2009) comment on the lack of immediate reception of the Copernican view by stating that "...the decision to accept or reject the Copernican view was difficult and required weighing up the significance of multiple factors that are not easily compared."¹⁵⁷

Another difficulty for the reception of Copernicus' view is that it was contrary to our commonsense observation of the world. In light of our commonsense observation that the Earth doesn't seem to be moving it makes sense why some scientists would have been reluctant to immediately accept the Copernican position.¹⁵⁸

Let's see how the Rheticus' case satisfies the four conditions for a case of epistemically significant expert conversion.

First, it seems straightforward that Rheticus' is using the same definitions and formalisms as the other experts in the field. One reason for thinking this is because there doesn't seem to be any evidence from his peers that Rheticus had done so. If Rheticus' reasons for changing his mind could be explained by radically diverging from the shared assumptions of his peers, it seems like they would have pointed this out to him.¹⁵⁹

Another reason for thinking that the Rheticus case satisfies the first condition is that dissenters, e.g., Blunderville, didn't object to the Copernican model by arguing that Copernicus

¹⁵⁷ Ibid. 97-98.

¹⁵⁸ McGrew, Kelly, Allhoff (2009), 97-98. One example of a scientist who did not accept Copernicus' view was Thomas Blunderville. Blunderville in 1594 wrote "Copernicus...affirmeth that the earth turneth about and that the sun standeth still in the midst of the heavens, by help of which false assumption he hath made truer demonstrations of the motions and revolutions of the celestial spheres, then were ever made before." in McGrew, Kelly, Allhoff (2009), 106.

¹⁵⁹ It may be argued that Rheticus did radically diverge from his peers on the assumption that earth rotated around the sun and hence there was not a shared minimal content. I do not think this is correct. Rheticus has enough shared formalisms, ontological schemas, and evidential standards to make the radically divergent background assumption objection dubious.

changed the meaning of the terms or formalisms, but objected based on the belief that Copernicus made a false assumption about the earth's rotation around the sun. Although not responding to Rheticus' directly, Blunderville is objecting to the Copernican model, who Rheticus, a student of Copernicus, is defending.

Earlier in the chapter, I mentioned Miller's distinction between essential versus accidental consensus. I argue that there is an analogue to Miller's distinction between essential and accidental consensus and my own account of expert conversion. I think that when it comes to an epistemically significant expert conversion, the conversion is something that could not have been easily manipulated. Put another way, Rheticus' conversion is epistemically sensitive. I do not intend to get into the debate concerning sensitivity, I simply want to make the point that Rheticus, and any instance of epistemically significant conversion, would not have easily believed something false.¹⁶⁰ The sensitivity condition also holds with respect to those scientists who continued to hold to a Ptolemaic model. The degree of insensitivity to the evidence will depend on the extent to which the new evidence presented by Rheticus is available to those scientists who continued to hold the Ptolemaic position.

Rheticus also satisfies the second condition of apparent consilience of evidence. There are at least two lines of evidence that Rheticus would have been aware of. First, he had the evidence explaining retrograde motion in a non-arbitrary way (the different planets were on different orbital tracks, and hence the smaller ones lapping the larger ones caused an optical illusion).

¹⁶⁰ The reasons Rheticus would not have easily believed something false is because he seemed epistemically sensitive to the putative evidence. Therefore, I have the last condition in my account of successful novel predictions and reliable track-record. Both requirements make it likely that the convert is changing their minds in an evidentially sensitive way.

Second, Rheticus had the evidence of being able to build a complete model of his system that Ptolemy couldn't, thus satisfying the Aristotelian ideal of *scientia*, or knowledge. A complete model means that it was possible to build a replica of the Copernican system. Ptolemy's model was incomplete because you could not make a replica of his system. If you tried to build one part of the system, you necessarily couldn't build another part. Ptolemy's model was geometrically inconsistent. For example, one Ptolemaic construction will tell you where to look for the moon on a given night while another construction will tell you how large the moon appears on any given night. But you cannot superimpose both of the models. If you use the model to find the moon, it will give you the wrong size of the appearance of the moon. Conversely, if you use the model to try to find the apparent size of the moon, then you will get the wrong answer to the location of the moon. Ptolemy's model is fundamentally not unified which is a negative feature of a scientific model.¹⁶¹

For those persuaded by scientific realism, if your theory cannot be made into a complete model this seems to count against your theory. Since the Copernican system could be modeled, this provides an additional line of evidence because systems that can be modeled in the actual world are *ceteris paribus* preferable to systems that cannot be modeled in reality.

The last condition is that there is a diversity of opinion between the converting expert and the possibly influential opinion of the expert's mentors and colleagues. Rheticus' seems to also satisfy this condition. His mentor, Schoner, was not a heliocentrist and there was also a diversity of opinion of experts in the field. In addition, there are social and psychological reasons that would seem to bolster the force of the evidence for Rheticus. In order to overcome the

¹⁶¹ Thanks to Tim McGrew for giving me this example of what it means for Ptolemy's model to not be constructible. McGrew mentions that these kinds of geometric inconsistencies occur throughout Ptolemy's *Almagest*.

temptation to agree with his influential mentor and colleagues, in order to maintain prestige or reputation, it seems like the evidence must be quite strong to overcome these temptations toward bias. So, we have a case of epistemically significant expert conversion with the case of Rheticus.

An objection to this last point that Rheticus satisfies the social diversity condition is that it can conflict with the first condition of having a shared commitment to the same formalisms.¹⁶² The objection goes as follows: The first condition requires a minimal shared content and commitment to similar background assumptions, but the third condition requires a level of diversity in opinions. Don't these two conditions conflict with each other? Not necessarily. Both conditions can be true, and I think for instances of epistemically significant conversion they must be. The reason for thinking this is because there needs to be enough continuity between the converting expert and the consensus that they aren't talking past each other, but there also needs to be enough diversity of opinion for legitimate development and progress in science to occur.

Additionally, I think the fourth condition, that the converting expert reliably make successful predictions can assuage any worries about the first and third conditions being fundamentally opposed to each other. The fourth condition can rule out cases of rogue scientists who seem to share the same formalisms as their peers but offers a radically different opinion. If that converting expert doesn't make reliably successful predictions in the future, then the expert's conversion probably wasn't significant.

In the case of Rheticus, he and the other heliocentrists were reliably producing successful novel predictions, and hence, avoid this charge of internal inconsistency. Having given an example of epistemically significant expert conversion with the Rheticus case, let's turn to a case of expert conversion that is not epistemically significant.

¹⁶² Eric Barnes raises this objection in comments on an earlier draft of this chapter.

6 Cases of expert conversion that are epistemically insignificant

There are a number of ways in which an expert can change their mind concerning a controversial proposition. I'll consider examples that fail different conditions in my account.

Biased reasoning

One example of expert conversion that isn't epistemically significant is the case of scientist C.C. Little. The reason this case isn't epistemically significant is because it is an instance of biased reasoning.

In his book, *Golden Holocaust: Origins of the Cigarette Catastrophe and the Case for Abolition*, Robert N. Proctor (2011) details the allegiance between C.C. Little and the tobacco industry which sought to create doubt in the minds of the public concerning the health safety of tobacco use.¹⁶³

The tobacco industry wanted to gain scientific credibility to help ward off criticisms from the scientific community. Not wanting the idea that tobacco consumption caused cancer and was dangerous for one's health, the tobacco industry created the Tobacco Industry Research Committee (TIRC). The scientist C.C. Little was made the first scientific director of the TIRC. Proctor recounts the conversion of Little from thinking that smoking causes cancer to thinking that smoking didn't cause detrimental health effects. Proctor writes the following:

Little's own views changed revealingly overtime, following his employment by the tobacco industry. In 1944 in a booklet titled *Cancer: A Study for laymen* published by the American Cancer Society, Little had stated that it was surely "unwise to fill the lungs repeatedly with the suspension of fine particles of tobacco products of which smoke consists."⁵¹ In 1960, however, when asked whether he still thought this unwise he replied, "No, as a general answer."⁵² Key for Little was a kind of constitutional cop-out: so while some people might be "irritated" by tobacco smoke, the majority escaped with no apparent harm. Or at least no reliable evidence of harm. Which for him meant it was

¹⁶³ See Robert N. Proctor (2011), *Golden Holocaust: Golden Holocaust: Origins of the Cigarette Catastrophe and the Case for Abolition*, Berkeley and Los Angeles: University of California Press.

wrong to say that smoking “caused” cancer...Here is how [Little] put it when testifying for the defense in *Green v. American Tobacco*, one of the first tobacco trials.

Q: Doctor, do you know of any one specific statistical study that shows that there is no relationship between smoking and lung cancer, any original study?

A: That’s a hard question to answer, in a way... I would say that isn’t a question of statistics. It is just a question of fact, that the living people who smoke prove that there is no relationship in their base between cancer and smoking because they haven’t got cancer.¹⁶⁴

What are some things that we can take away from the case of Little and the Tobacco industry?

First, it doesn’t seem like Little’s view changed because of new evidence but rather because he started working for the Tobacco industry. Little doesn’t appear to have changed his mind on the basis of evidence and we have positive evidence in thinking that he changed his mind for biased or motivated reasons, i.e., he was working for the Tobacco industry.

Second, Proctor points out that Little fails the first condition for epistemically significant conversion with his very limited notion of what counts as a “cause.” When he says that smoking doesn’t cause cancer because there are people who smoke and do not get cancer, he is working with such a narrow notion of cause that it arguably doesn’t mean the same thing as when other scientists use the term. Although Little doesn’t state it explicitly, when he says that smoking doesn’t cause cancer because there are people who smoke who don’t get cancer, he is implicitly affirming a notion of causality in which A causes B only if B necessarily follows from A. Yet, this is hardly what scientists means when they claim that A causes B. Hence, Little’s conversion fails to be epistemically significant for a second reason: he doesn’t use the same scientific concepts or schemas.¹⁶⁵

¹⁶⁴ Proctor (2011), 274-275.

¹⁶⁵ *Ibid.*, 275.

We've now looked at examples of expert conversions that are epistemically significant and those which are not. Let's address objections to my account.

7 Objections

Objection 1

Your position argues that there is something special about expert conversion *per se* that confers epistemic significance over and above expert testimony *simpliciter*. But it doesn't seem like simply changing one's mind provides *additional evidence* for believing an expert. What work is conversion doing in providing additional reason for believing P that expert testimony *simpliciter* isn't already doing?

Reply to objection 1

I agree that an expert changing their mind doesn't always provide additional reason for the novice to believe P, but I do think it does sometimes. In particular, I think that when an expert seems to have converted for evidential reasons, as outlined by my account of significant conversion, the novice does in fact have additional reason, on top of mere expert testimony, for trusting the expert.¹⁶⁶ The reason I think this is that for an expert to testify that P, after having believed not-P, and avoiding the biases discussed in my account, the novice has good reason,

¹⁶⁶ Tom Senor raises a good question in which he asks whether the novice has stronger reasons for believing an expert who converts from not-P to testifying that P than an expert who does not convert and merely testifies that P. Jack Lyons raised a similar question in discussion. My answer is sometimes. Whether the testimony of an expert who converts provides stronger reasons for the novice compared to the testimony of a non-converting experts depends on several factors in which a yes or no answers cannot be provided in the abstract. Recall that the strength of the epistemic significance comes in degrees. This means that the strength of the epistemic significance will depend on who the expert is (is he/she a highly respected expert in the field), on the nature of the content testified (is it regarding a primary question or a secondary question?), and the weight of the counter testimony from the other experts. All these factors need to be considered in or to answer the question whether converting expert testimony provides stronger reasons to believe than non-converting expert testimony.

reason above just expert testimony, that the evidence is very strong. Hence, I think a plausible case can be made that conversion can in some cases provide additional reason for thinking that P is true that goes beyond mere expert testimony. What I am not arguing for is that the novice is always justified in believing P solely based on the conversion of the expert. Additionally, the novice must consider the defeaters for P, in particular, the testimony of other experts. Whether a novice is justified in believing P on the basis of an expert conversion and other reasons will depend on the strength of the expert consensus against the converting expert's testimony, the extent to which the novice is informed on the issue, and whether there is a trend of experts who are converting from P to not-P rather than from not-P to P.¹⁶⁷ Generally speaking, when an expert converts from a majority position to a minority position the strength/degree of epistemic significance of their testimony will be less. Nevertheless, I do not think that this generalization holds necessarily. I think there needs to be room for cases like Rheticus in which a very credible expert changes their mind and it may give an extra epistemic boost to the novice. I do think cases like the Rheticus one in which a novice would receive an additional epistemic boost are rare.

Objection 2

¹⁶⁷ An example that I am thinking about that illustrates this sort of trend of experts is the conversion of several experts from a variety of disciplines from some form of Protestant Christianity to Catholic Christianity. This trend has occurred several times in history. Two recent trends include the Oxford Movement which occurred in mid-eighteenth-century England. There were several notable Oxford academics who converted from Anglicanism to Catholicism. A chief representative of this movement and a convert himself was Saint John Henry Newman. There has been another wave of conversions from Protestantism to Catholicism in North American academic circles. See the following works that include details of these conversions, R.J. Snell and Robert P. George, eds., (2018), *Mind, Heart, and Soul: Intellectuals and the Path to Rome*, Charlotte: Tan Books; Brian Besong and Jonathan Fuqua (2019), *Faith and Reason: Philosophers Explain Their Turn to Catholicism*, San Francisco: Ignatius Press; Douglas M. Beaumont (2016), *Evangelical Exodus: Evangelical Seminarians and Their Paths to Rome*, San Francisco: Ignatius Press.

Your example of Rheticus is not convincing. The reason why it seems to us that Rheticus' conversion is evidence-based and thereby epistemically significant is because we know that Rheticus ended up being correct. Isn't this just an instance of a hind-sight bias? The Rheticus case does not provide convincing reasons for thinking that your conditions are useful for determining whether an expert conversion is epistemically significant.

Reply to objection 2

The claim that the only reason we find Rheticus' case convincing is because we know that he ended up being correct doesn't seem to me to do justice to the historical evidence we have from Rheticus' life. First, Rheticus was a well-respected academic. He held a position teaching mathematics and astronomy both at the University of Wittenberg and the University of Leipzig.¹⁶⁸ This occurred both before and after he began his conversion to the Copernican system. Moreover, Rheticus was well received, not only by his colleagues such as Joachim Camerarius, who was head of the University of Tübingen, his teacher Johannes Schoner, but also novices like the mayor of Danzig, the printer Johannes Petreius, and Duke Albert of Prussia. All of these individuals, experts, and laity, received the work of Rheticus with enthusiasm.¹⁶⁹

Concerning Rheticus' character and what his contemporaries thought about him, Robert S. Westman writes:

If indeed one were to point to the single most prominent trait in Rheticus' personality, based upon the tone of his writings, the testimonies of his contemporaries, and his own life activities, one would have to seize upon his great energy and intensity—whether in the vitality of his work, in his widespread travels, or in his evident pursuit to lay to rest something inside himself.¹⁷⁰

¹⁶⁸ See John J. O'Connor and Edmund F. Robertson (1998), "Georg Joachim Rheticus", *MacTutor History of Mathematics archive*, University of St Andrews, <http://www-history.mcs.st-andrews.ac.uk/Biographies/Rheticus.html>.

¹⁶⁹Ibid.

¹⁷⁰ See Robert S. Westmann (1975), "The Melanchthon Circle, Rheticus, and the Wittenberg Interpretation of the Copernican Theory", *Isis*, Vol. 66, No. 2, 182.

Here we have evidence that Rheticus was passionate, well-respected, and zealous for what he thinks is true. Rheticus seems like a clear case of epistemically significant expert conversion because he was competent in his ability to make an expert judgment based on his knowledge of Copernicus' work. Moreover, Rheticus arguable knew more about Copernicus' work than anyone else and offered great reasons for his conversion.¹⁷¹

Objection 3

It might be objected that Rheticus' was too enthusiastic and suffered from convert zeal and an overconfidence bias. Doesn't this undermine the Rheticus case as positively epistemically significant?

Reply to Objection 3

While it's possible that convert zeal which I take to be a kind of overconfidence bias, can defeat positively epistemically significant expert conversion, I don't think it applied in the case of Rheticus. It is true that he was zealous, but the historical evidence suggests that what he was clear minded and rigorous in his reasons for thinking the Copernican system was true. Moreover, Rheticus had the checks and balances of his colleagues to make sure he wasn't going completely off the rails, Additionally, since Rheticus was advocating the views of Copernicus at time in which the view was the minority position, he had even more checks on his zealousness.

Objection 4

Doesn't the social calibration condition, specifically the same ontological schema condition, make progress in science impossible? Additionally, doesn't virtually all conversion involve a change in ontological commitments.

¹⁷¹ Thanks to Timothy McGrew for pointing this out to me.

Reply to Objection 4

In reply to the first question, I don't think that the requirement that a converting expert needs to be committed to the same ontological schema makes scientific progress impossible. One reason for thinking this is explained by the fact that scientists can be committed to the same ontological schema, i.e., the same empirical phenomena, yet vary in their *metaphysical interpretation* of the schema. Miller makes this point when discussing the social calibration condition, he writes:

[S]cientists may vary in their beliefs about the reality of the objects such ontological schemes describe, while all using the schemes in their reasoning...I argue that such a joint commitment satisfies the social calibration condition, even if members of the consensus differ in their conceptual interpretations of these schemes.¹⁷²

Miller goes on to give an example of scientists who are committed to the same ontological schemas but vary in their interpretation of those schemas. He writes:

For example, all interpretations of quantum mechanics, e.g., the Copenhagen, many-worlds, and hidden-variables interpretations are committed to using the same mathematical formalism that represents quantum state vectors in a Hilbert space. *It is exactly this commitment that ensure that they are interpretations of the same theory, and latch on to the same empirical phenomena in the same way.* At the same time, they significantly diverge in their metaphysical interpretations of these phenomena.¹⁷³

In a way that's similar to what Miller says about the shared commitments condition that's needed for knowledge-based consensus, my account of epistemically significant expert conversion also requires shared ontological commitments, but the interpretations of these commitments may vary. For example, young earth creationists arguably do not have a shared ontological commitment because young earth creationist don't use the same sort of methodological

¹⁷² Miller (2013), 1301.

¹⁷³ Ibid., 1302.

reasoning and evidential standards as evolutionary biologists. We've discussed this earlier in the chapter when looking at examples of epistemically insignificant conversion.

Miller's use of similar ontological commitments can be somewhat misleading. Miller's main objective for the same ontological schema condition is more concerned about the *methodology* used in the reasoning process of scientific inquiry rather than what a particular scientist believes *does or does not exist*. For example, Miller gives the example of population genetics. He thinks that two scientists are working from the same ontological schema when they both use a 'population of objects' as an ontological category in their reasoning about population genetics. Both scientist's commitment to using the concept of a 'population' allows them to being committed to the same ontological schema, even if they disagree about the *actual* ontology of a population. For example, maybe one scientist thinks that a population is composed of people whereas another scientist thinks that a population is composed of just atoms, nevertheless, each uses the concept of a 'population' in their reasoning process. I think distinguishing between *shared methodological commitments* (which include commitments to shared concepts) and the *shared deep ontological commitments* would help clarify the point Miller is making.

In response to the second question, I don't think that all conversion involves adopting new ontological schemes, even if changes in metaphysical interpretations vary. Miller's example of variance among interpretations of quantum mechanics is apt. I can convert from the Copenhagen interpretation to the many-worlds interpretation of quantum mechanics and still be committed to the same ontological schemas generally speaking. Arguably, I can convert from a Newtonian model to a relativistic model and still be committed to the same ontological commitments, even if my metaphysical interpretation of space-time varies. Again, this is because Miller is understanding ontological schema's more in terms of methodology rather than deep

ontology. Miller and I both agree on the following claim: when there is controversy concerning the metaphysical interpretation of a shared formalism, then the scope of the knowledge-based consensus (Miller), or the scope of the epistemic significance of the converting expert testimony (Bennington), is limited to only the content which is shared between the disagreeing parties.

8 Conclusion

In this chapter, I have answered the central question of *when* expert conversion is epistemically significant. Epistemically significant expert conversion occurs when sensitivity to the evidence is the best explanation for the conversion. I provided a diagnostic for epistemically significant expert conversion and gave particular example of when an expert conversion was epistemically significant or not.

Considering what I have argued for in this chapter concerning when expert conversion is epistemically significant, I'll turn to the next chapter in order to answer the following question: *how* should the novice respond to conversion of experts, when the conversion is epistemically significant, or when the expert has reasoned in a biased manner?

Chapter 4: How Should Novices Respond to Expert Conversion

1 Introduction

In this chapter, my goal is to answer the following question: *how* should the novice respond to the conversion of experts when the conversion is epistemically significant and how should the novice respond when the conversion is epistemically insignificant? Drawing from my account of the epistemic significance of expert conversion in chapter three, I will argue that what the novice ought to do depends on how epistemically significant the expert conversion is and whether the novice has overriding defeaters for trusting the converting expert.

The structure of this chapter goes as follows. First, I will state the second question I seek to answer, that is, how a novice should respond to an epistemically significant expert conversion and discuss how it relates to my central question of the previous chapter, that is, when an expert conversion is epistemically significant. Second, I will discuss ways in which a novice can go wrong with respect to updating their beliefs in virtue of expert conversion. Third, I will discuss Melissa Lane's (2014) view about what responsibilities novices have with respect to expert disagreement and biases. Fourth, I will follow Lane's suggestion that novices should develop certain meta-cognitive skills and virtues for identifying experts. I will expand on this idea by detailing the account of self-reflective conscientiousness offered by Linda Zagzebski. By detailing the accounts of Lane and Zagzebski, I will give an account of how the novice can properly respond to expert conversion.

2 The second question and how it relates to the central question

In chapter two I claimed that expert conversion is a type of Goldman's novice/2-expert problem. The novice/2-expert problem involves cases in which a novice must adjudicate between at least two experts who disagree with each other. The difficulty with situations like this, for the

novice, is how they can discriminate between the testimony of the two experts without also becoming an expert themselves. In chapter two we saw how difficult the novice/2-expert problem can be when we discussed Hardwig's blind trust account of epistemic dependence. The novice can never be an expert in every subject she takes herself to know. The amount of time and cognitive ability necessary for this is impossible.

In a similar way, when an expert changes their mind, they are not only disagreeing with the consensus (at least in many cases), but they are also disagreeing with their previous selves. The difficulty for the novice is to know how to respond when this happens. To resolve this problem, we need to first determine when expert conversion is significant (chapter three), and how the novice should respond, depending on the answer to the first question.

In answering this second question, let's first look at how the novice should *not* respond to the conversion of an expert. There are at least four ways in which a novice can go wrong with respect to changing their beliefs in light of *known* expert conversion.¹⁷⁴ First, the novice can ignore epistemically significant expert conversion and not update their beliefs according to the testimony of the converted expert. I call this the *head-in-the-sand response*. Second, they can see the expert who changes their mind as an instance of disagreement that undermines the authority of all expert testimony. I call this view *cynicism*. Third, the novice can succumb to an overconfidence bias in which the conversion is epistemically significant, but the degree of confidence that the novice places in the expert's testimony is unjustified. I call this position *overconfidence*. Fourth, the expert conversion can be epistemically insignificant, yet the novice

¹⁷⁴ Tom Senior raises an important question about whether my account of expert conversion involves both known and unknown expert conversion. For the purposes of this dissertation, I will only focus on the epistemic significance of known expert conversion and what the novice ought to do when they are aware of an expert conversion. For discussion of cases of culpable ignorance see Sanford Goldberg (2017), "Should have known," *Synthese*, 194 (8): 2863-2894.

places trust in the expert anyway. I call this position *gullible*. Let's look at each of these wrong turns that the novice can make in more detail.

3 Ways the novice can go wrong with respect to expert conversion¹⁷⁵

	Significant conversion	Insignificant conversion
Pessimism (head in the sand and pessimism)	<i>Head-in-the-sand</i> Conversion is significant, but the pessimist distrusts converting expert.	<i>Cynicism</i> Conversion is insignificant, pessimist distrusts all relevant experts.
Optimism (overconfident and gullible)	<i>Overconfident</i> Conversion is significant and optimist places too much trust in expert	<i>Gullible</i> Conversion is insignificant and optimist places too much trust in experts.

3.1 The Pessimistic responses: head-in-the-sand and cynicism responses

The first way in which a novice *should not* respond to the epistemically significant conversion of an expert is to take the instance of expert disagreement (whether the disagreement is from the converting expert's disagreement with the expert consensus on the issue or with disagreement with his previous beliefs, or both) as a sufficient reason to be pessimistic about the expert testimony.¹⁷⁶ This kind of pessimistic response to expert disagreement in general, and

¹⁷⁵ The reason that I call these positions as either optimistic or pessimistic is because the former takes a broadly positive response to expert conversion while the latter takes a broadly negative response to expert conversion. Nothing essential about my argument hinges on this categorization. I find it as a helpful heuristic to categorize the many ways in which a novice can go wrong with respect to expert conversion.

¹⁷⁶ The stronger sort of disagreement is disagreement with the consensus. This is for two reasons: first, when an expert disagrees with the consensus, they have a great deal of counter-evidence to their position from the testimony of the experts who are part of the consensus. The second reason is that changing one's mind does not necessarily mean that the person is epistemically unreliable. It could mean that the person is sensitive to changes of evidence and hence possibly more reliable than someone who has always held to the same position.

expert conversion in particular, can take at least two general forms. The pessimism can take the form of what I'll call *head-in-the-sand ignorance* and *cynicism*.

The first kind of pessimism is characterized by the novice ignoring the testimony of the converting expert and not updating their beliefs in proportion to the evidence.¹⁷⁷ The second kind of pessimism is characterized by the novice rejecting or being skeptical of all expert testimony. Later in this chapter, I'll discuss some of the empirical literature that documents this type of biased reasoning.¹⁷⁸

Let's consider first why the head-in-the-sand response is an epistemically inappropriate response to epistemically significant expert conversion. Suppose a novice, who is a geocentrist at the time of Rheticus, was confronted with the testimony of Rheticus concerning the truth of heliocentrism. Moreover, suppose that the novice doesn't have any reason for thinking that Rheticus has converted for biased reasons. If the novice does not update his beliefs by decreasing his confidence in the truth of geocentrism, at least some, then the novice is not responding to the conversion of the epistemically significant conversion of an expert in an appropriate way.

I think that the reason the head-in-the-sand response is the epistemically inappropriate way to respond can be understood in a variety of ways given one's theory of epistemic justification (e.g., reliabilism, evidentialism, proper functionalism, virtue epistemology, etc.) I'll provide an analysis of the epistemic inappropriateness of the response of the novice in terms of virtue epistemology, but I think any of the main theories of epistemic justification can explain

¹⁷⁷ Eric Funkhouser correctly points out that when the expert conversion is not epistemically significant the novice correctly responds by ignoring the converting experts' testimony.

¹⁷⁸ See Stephen Lewandowsky et al (2013), "NASA faked the Moon Landing – Therefore, (Climate) Science is a Hoax: An Anatomy of the Motivated Rejection of Science." *Psychological Science*, 24 (5) 622–633.

why the head-in-the-sand response is wrong. In sections 4 and 5 of this chapter, we will look at a virtue epistemology analysis of how novices should not respond to expert conversion.

The second kind of pessimism is what I'll call cynical response, or *cynicism*. The novice engages in a cynical response to expert conversion when a *particular* expert conversion is epistemically insignificant, but the novice dismisses *all* expert testimony. There is empirical literature that suggests that when people encounter disagreement among experts, they tend toward distrust of all expertise in the related field. We can use this data to demonstrate how people might be motivated to reject the testimony of all experts if they judge that a particular expert has converted for biased reasons.

I think that this response by the novice to expert disagreement is also epistemically inappropriate. Stephen Lewandowsky et. al (2013) looked at the anatomy of motivated reasoning in the rejection of science. They hypothesized that the rejection of science was common among individuals who (1) endorsed of a free-market ideology and (2) had a disposition toward conspiratorial thinking. Further, they hypothesized that the conjunction of endorsing a free market ideology, a tendency toward conspiratorial thinking, and the internet, provided the mechanism for encouraging this kind of science denial.¹⁷⁹ They interviewed a number of individuals who blog about climate change and looked for the following: (a) the blogger's view on climate science; (b) whether they held to a free market ideology or endorsed various conspiracy theories, e.g. that the moon landing was faked; (c) whether the blogger believed that previous environmental problems had been resolved, e.g. that acid rain is no longer a threat to the environment and (d) and whether the blogger perceived that there was a scientific consensus among climate scientists concerning global warming.

¹⁷⁹ Lewandowski et. al (2013), 624.

The results of the study are the following: First, endorsement of an unregulated free market is highly predictive of climate science denial.¹⁸⁰ Second, endorsement of unregulated free market ideology also predicted the rejection of other propositions about science, e.g., that HIV causes AIDS, but to a lesser degree than the predictive power of rejecting climate science. Third, there were negative associations between conspiratorial thinking and acceptance of climate science and other scientific propositions. Fourth, there was a negative association between the belief that previous environmental problems had been resolved and the acceptance of climate science.

What these results seem to indicate is that the endorsement of an unregulated free market is a large predictor of climate science denial. It is also a predictor of the denial of other scientific facts, e.g., HIV causes AIDS, but to a lesser degree. Additionally, the tendency towards endorsing conspiracy theories is a trait that is not unique to climate science denial, but rather is something which applies to a variety of scientific claims. Interestingly, according to the study, endorsement of an unregulated free-market ideology is a greater predictor of climate denial than a tendency toward conspiratorial thinking.

With Lewandowski's study in hand, let us discuss a case that demonstrates the cynical response to expert disagreement in general and can be applied to expert conversion in particular. Consider the case of Dr. Little from the previous chapter. It's discovered that he was essentially paid off by the Tobacco industry to testify that smoking causes cancer. A cynical response to this case of Dr. Little's 'conversion' would be to reject the testimony of all medical experts as "capitalist cronies" who can easily be paid off by companies and it doesn't matter what you do with respect to your health.

¹⁸⁰ Ibid., 628.

The Lewandowsky paper demonstrates that despite the cautions to not reason this way, people often in fact do. What's inappropriate in responding to this kind of biased reasoning by experts?

The cynical response is epistemically inappropriate because they are committing the fallacy of hasty generalization. Just because there is reason to be suspicious of the credibility of *some* scientists, it doesn't follow that we have grounds for doubting the claims of *all* scientists. Additionally, the cynical response ignores salient evidence, or engages in a kind of biased reasoning called selective evidence gathering. The novice may have evidence that this particular, or select group, of expert's testimony is to not be trusted, but she doesn't have evidence for thinking all of the scientists are untrustworthy. In particular, she has salient evidence that many of the scientists are telling the truth and hence cannot ignore this evidence.

3.2 The Optimistic responses: Overconfident and Gullible

The second way in which a novice can go wrong with respect to updating their beliefs about the testimony of a converting expert is to either place too much confidence in the evidence from the testimony of the converting expert or to be too trusting in expert testimony generally. I call this response in the broad sense *optimism*. Optimism can take at least two general forms: overconfidence and gullibility. The first kind of epistemically inappropriate optimism is what I call overconfidence. *Overconfidence* is epistemically inappropriate because the evidence we have does not support our high degree of confidence. For example, we can be overconfident in the testimony of an expert, specifically in cases of conversion, and this can lead us into not being open to other sources of evidence and even forming an echo chamber in which we only encounter views that confirm our own position. One example of overconfidence might be if a novice were to place too much credence in the conversion of Rheticus to the Copernican model.

The novice might fall into overconfidence with respect to the epistemically significant conversion of Rheticus in thinking that Rheticus' testimony supports their belief more strongly than it in fact does. Suppose Rheticus' conversion is epistemically significant as argued for in chapter three. Rheticus had peers who disagreed with him, e.g., Blunderville. If the novice were to place too much credence in Rheticus' testimony, particularly in light of having a defeater from the contrary testimony of Blunderville, then the novice would succumb to the epistemically inappropriate problem of optimistic overconfidence. There isn't a precise line where one's credence is not supported by the testimony because it will need to be weighed in the context of comparing the degree of epistemic significance of the converting expert with the weight of the counter expert testimony.

The second kind of optimistic response that is epistemically inappropriate is what I call the *gullible* response. Gullibility occurs when an expert conversion is epistemically insignificant, and the novice is too trusting in the experts generally.

Consider a case in which a biologist converts from naturalism to some form of theism (Islam, Judaism, Christianity, etc.). Suppose this individual does not see how their particular interpretation of scripture can fit with what the scientific data suggests. In order to resolve the cognitive dissonance, the scientist looks for other hypotheses that can putatively resolve the conflict (e.g., scientific creationism). The scientist then also changes their mind concerning the viability of evolutionary theory as a robust explanation of the diversity of life because they can't see how this is compatible with what they think is the only available scriptural interpretation of the book of Genesis (six-day literal creationism). Now the scientist endorses creationism, not on the basis of the science, but on the basis of the incompatibility of the scientific data and their interpretation of scripture. If a novice were to trust the expert in this case, I think it would be a

case of *gullibility*.¹⁸¹ It should be noted that gullibility, like cynicism, comes in degrees. This is because the novice might not be able to tell whether the scientist in this case is discrediting evolutionary theory because of the perceived incompatibility with a particular scriptural interpretation or because there really are doubts about the theory as an adequate explanation of the data. The degree to which the novice succumbs to gullibility will depend on factors such as the cognitive capacities of the novice and how much investigation they've given to the subject of studying the science. For example, it's possible that a novice who has an undergraduate degree in science would be in a better position to judge whether an expert has converted on the basis of evidence or due to motivational biases. This probably indicates the expertise comes in degrees and novices can be in better or worse positions in discriminating between experts.

We have detailed at least four ways in which the novice can fail to respond to the conversion of an expert appropriately. This is helpful because it provides the novice with a guide for ways in which they can reason inappropriately. By learning ways in which you can go wrong when reasoning in light of expert conversion we can help bridge the epistemic gap between experts and novices. It's a helpful reminder for all epistemic agents, even if the details are obvious, because it is so easy for us to make mistakes.

¹⁸¹ Tom Senor makes the good point that the case presented may not be so much gullibility, but a motivated reasoning based on believing something merely because you want it to be true. I think that in some cases this is correct, but I also think the case I present can be a genuine case of gullibility based on the amount of research and testimony that is received. For example, suppose the person has only been taught creation science and they hear the testimony of a biologist who has converted to Christianity and now believes in creationism but not because of the science but because of a literalistic interpretation of scripture. I think in this case the person is gullible and not as much only believing something because they want it to be true.

In this next section, I'll present an account that draws from both Melissa Lane and Linda Zagzebski in which I'll analyze why each of the four responses are epistemically inappropriate and how the novice *can* respond appropriately.

4 Lane's moderate view concerning expert disagreement

In this section, I will explain Melissa Lane's moderate solution to the problem of disagreeing experts.¹⁸² I think Lane's account offers a plausible way of explaining how the novice can appropriately respond to the conversion of an expert and avoid the pitfalls of *pessimism* as well as *optimism*. The novice avoids both of these pitfalls when they appropriately trust the experts. An expert is trustworthy when they are honest and transparent. A novice can develop certain skills, according to Lane, in order to discern whether the expert is honest and transparent, without having to become an expert in the field. The novice develops these skills of discernment by practicing certain epistemic habits and acquiring certain epistemic virtues.

Lane argues that the novice should cultivate *certain epistemic virtues* in order to avoid certain biased thinking regarding the testimony of experts. These include 'meta-cognitive skills' that allows novices to appropriately judge experts without becoming experts themselves. Let's see why Lane thinks these meta-cognitive skills are important for the novice to cultivate.

In her paper, "When Experts are Uncertain: Scientific Knowledge and the Effects of Democratic Judgment," Lane begins by asking whether ordinary citizens in a democracy can evaluate the claims of scientific experts.¹⁸³ She notes that at least two broad camps have formed in answering this question. The first camp, whom Lane calls the *skeptical* camp, are those who

¹⁸² See Melissa Lane (2014), "When Experts are Uncertain: Scientific Knowledge and the Ethics of Democratic Judgment", *Episteme*, Vol. 11, 97-118.

¹⁸³ *Ibid.*, 97. Lane focuses in on scientific experts. I'll focus on discussing scientific expertise, but I think that my account may generalize to many types of expertise.

generally answer no to the question concerning ordinary citizens' ability to evaluate the claims of scientific experts. In contrast, Lane calls the other camp the *optimistic* camp, who generally answer yes to the question concerning ordinary citizens' ability to evaluate the claims of scientific experts.¹⁸⁴

Roughly, the skeptics think that the citizen's or novice's choice reduces to evaluating the credentials of the experts, but proper evaluation of credentials requires a level of expertise, in the relevant domain, not available to the novice. On the other hand, the optimists think that novices are in fact capable of evaluating the credentials of the relevant experts.

Lane goes on to discuss in detail why each camp gives their respective answers to the question. She mentions that the discussion is largely framed by Goldman's discussion of the *novice/2-expert problem*. Recall that Goldman's novice/2-expert problem involves a problem for the novice in *identifying* which of two disagreeing experts is the one that the novice ought to epistemically defer. Lane's thinks most of the solutions to the novice/2-expert problem are mistaken. They are mistaken because the proposed solutions wrongly assume that the solution to the problem lies at the second-order level rather than at the first-order level. For example, a second-order solution to the problem is for the novice to look at the credentials of an expert (second-order evidence) rather than try to engage the first-order arguments of the expert. We will see that Lane's view advocates for bridging the first-order epistemic gap between the novice and expert by educating the novices in the relevant E-domains.

Lane discusses the various positions that answer the question of whether novices can evaluate the claims of scientific experts. She focuses on two main views: skepticism or

¹⁸⁴ Ibid., 98.

pessimism and optimism. Scott Brewer endorses skepticism and Elizabeth Anderson endorses optimism.¹⁸⁵

4.1 Brewer's skepticism

Brewer's position is that the non-expert (in this context it's a judge or jury adjudicating between competing expert testimony) isn't in a position to judge the credentials of disagreeing experts.¹⁸⁶ Hence, calling his position the 'skeptical' position. Brewer thinks the only solution to this problem is for the judge or jury to be an expert in the field.

Lane's assessment of Brewer's position is that Brewer's position reduces the novice/2-expert framing of the problem to what she calls the *novice/hired-gun* framing of the problem. According to Lane, the novice/hired-gun frame of the problem essentially reduces to the novice being forced between choosing between two possible frauds and not knowing which or if either of the experts are in fact frauds. Lane points out that if Brewer's skeptical account is correct, then it seems like there is a lot of knowledge or justified belief that is lost by the novice. The standard case that is given by Brewer is one in which two experts both give equally compelling cases for their positions. He thinks that the only things the novice really has to go on are credentials.¹⁸⁷ Brewer goes on to argue that the novice is not in a position to assess competing credentials, hence, he is skeptical that the novice has any true ability to judge between two disagreeing experts. Brewer's argument against the novice's ability to judge between two disagreeing experts can be summarized as follows:

¹⁸⁵ *Ibid.*, 100.

¹⁸⁶ See Scott Brewer (1997-98), "Scientific Expert Testimony and Intellectual Due Process." *Yale Law Journal*, 107: 1535–679.

¹⁸⁷ Brewer (1997-98), 1538. cf. Lane (2014), 101.

A person can assess the credentials of a putative expert only if one has a full understanding of the expertise it certifies. One has a full understanding of the expertise a credential certifies only if one has that credential. Therefore, a person can assess the credentials of a putative expert only if one has the credentials themselves. For example, Brewer argues that the only people who can evaluate the claims about physics of a physicist are other physicists. But a novice is not a physicist, so a novice cannot evaluate the claims about physics made by a physicist. From this argument, Brewer concludes by stating:

[T]he nonexpert's lack of epistemic competence threatens to deprive her of precisely the kind of understanding she would need to be able to confirm or disconfirm a hypothesis about credentials and their capacity accurately to identify which experts are capable of producing KJB and which are not.¹⁸⁸

Brewer goes on to argue that what is necessary for the proper judgment between disagreeing experts to occur is that the person, the novice, must also be a cognitive expert. Brewer's solution to the novice/2-expert problem isn't a solution but rather a dissolution. In order to solve the novice/2-expert problem, the novice must become an expert. Suppose for example, a judge must decide between the testimony of two medical experts who disagree with each other concerning the severity of some personal injury case. Brewer thinks a judge could become competent enough through experience 'on the bench' to learn enough about human anatomy and common injuries that occur during motor vehicle accidents that over time he could make rationally warranted decisions about competing expert claims. Another example may be that an undergraduate degree in the hard sciences may be sufficient to render someone a kind of expert in assessing the claims of climate scientists. There is a tension here in Brewer's account, which

¹⁸⁸ Ibid. 1669. cf. Lane (2014), 101. n.b. Lane points out that Brewer does not distinguish between knowledge and justified belief in his argument against the novice's ability judge between two disagreeing experts.

lies in the fact that he thinks only experts can assess expert statements, but he also thinks that a judge doesn't need to be at the same level of expertise as the medical experts.

Lane diagnoses the problem with Brewer's account in the following way. She thinks that Brewer conflates diverse levels and sources of expertise under "epistemic competence."¹⁸⁹ Concerning the concept of epistemic competence and its connection to his solution to the novice/2-expert problem, Brewer writes:

The only solution (actually, it is a family of solutions) I see requires that one and the *same* legal decision maker wear two hats, the hat of epistemic competence and the hat of practical legitimacy. That is, whether it is a scientifically trained judge or juror or agency administrator, the same person who has legal authority must also have epistemic competence in relevant scientific disciplines.¹⁹⁰

Brewer does not give specifics about what counts as epistemic competence, but it seems to be something in the realm of at least an undergraduate degree in the relevant discipline. For example, you'd need at least an undergraduate degree in biology, chemistry, or physics to be able to assess which experts to you ought to trust.

Lane argues that Brewer's account is problematic for at least two reasons. First, by positing that the novice (judge in Brewer's example) must also be a cognitive expert, the judge no longer needs to assess the credentials of the disagreeing experts. Recall from chapter two that according to Goldman a cognitive expert is one who (1) possesses more true beliefs and/or fewer false beliefs within the E-domain compared to others. (2) has a capacity to deploy knowledge of that information in forming new beliefs in true answers to new questions and (3) possesses extensive knowledge of both primary and secondary questions and the answers to those questions within the E-domain.

¹⁸⁹ Lane (2014), 102.

¹⁹⁰ Brewer (1997-98), 1681. cf. Lane, 102.

The novice (judge), according to Brewer, can simply enter into the first-order debate and not have to rely on second-order judgments concerning credentials.¹⁹¹ Hence, if Brewer's solution works, it seems to render judgment of credentials otiose. Second, Brewer seems to have no non-arbitrary level of cognitive expertise that is necessary to render the novice (judge) competent. Brewer doesn't think an M.D. or Ph.D. is necessary, but seems to settle with an undergraduate degree, in the relevant field, as a fitting level of cognitive expertise. For example, an undergraduate degree in life sciences would be sufficient for assessing expert claims about climate change. Lane remarks that even an undergraduate degree might not be enough because many times judgments must be assessed with respect to expertise in multiple disciplines. So, it seems like in order to count as "epistemically competent", Brewer's novice (judge) must possess however many undergraduate degrees are necessary in assessing the first-order disputed questions. Brewer's solution is dubious and impractical.

Why does Lane think Brewer's solution to the novice/2-expert problem conflates the diverse levels and sources of expertise with respect to his concept of "epistemic competence"? Recall that for Lane and Goldman, expertise is something that comes in degrees. Additionally, there are different kinds of expertise. For example, Lane argues, following Collins and Evans (2007), that we can make a distinction between two kinds of expertise.¹⁹² The distinction is between contributing expertise and interactional expertise. *Contributing expertise* is what's needed to participate in the activity and advance of the objectives of the relevant domain of expertise. In contrast, *interactional expertise* is an ability to talk about the activity and to understand the talk about it without being able to contribute to its being done or to teach anyone

¹⁹¹ Lane (2014), 102.

¹⁹² H.M. Collins and Evans, R. (2007), *Rethinking Expertise*, Chicago: University of Chicago Press.14, 35. cf. Lane, 101.

else how to do it.¹⁹³ This distinction between contributing expertise and interactional expertise is similar to Goldman's distinction between strong expertise and weak expertise. Recall from chapter two that Goldman claims that strong expertise is knowledge of primary and secondary questions in the relevant E-domain. Weak expertise is knowledge only of secondary questions. Primary questions are principal questions of interest to researchers and students. On the other hand, secondary questions are the existing evidence and arguments that bear on the primary questions as well as knowledge of what other relevant experts think about the state of the evidence.

An example that highlights the difference between contributory expertise might be something like the following. A contributory expert is a scientist who has a Ph.D. in the relevant expert domain and is an active and practicing scientist in the field. They publish in the top scientific journals and actively teach the next generation of scientists. In contrast, a science columnist who is relatively informed about the current issues in climate science and may have an undergraduate degree in biology or climate scientist but is not a practicing scientist nor competent to teach it at a collegiate level. This person might count as an interactional expert. The science columnist attends professional workshops and conferences put on by professional scientific organizations that has contributory experts, but they don't contribute to the field through research projects and teaching.

According to Lane, Brewer makes too sharp a divide between expert and novice, and therefore conflates the diverse levels and sources of expertise. By doing this, Brewer rules out the possible conceptual resources (different levels of expertise), that might allow him to develop a more nuanced and practical solution to the novice/2-expert problem.

¹⁹³ Lane, 101.

Lane, citing Aristotle, believes that expertise runs along continuum and is more nuanced than Brewer's account.¹⁹⁴ In his *Politics*, Book III, chapter 11, Aristotle comments on three levels of expertise:

But physicians are of three kinds: there is the ordinary practitioner, and there is the physician of the higher class, and thirdly the intelligent man who has studied the art: in all arts there is such a class; and we attribute the power of judging to them quite as much as to professors of the art.¹⁹⁵

Lane points out that each of the three levels of experts, according to Aristotle, count as a doctor. What these distinctions made by Aristotle amount to is that a person who has much less expertise relative to another expert can still rationally judge the most specialized expert. Hence, on Aristotle's view (and Lane's) a person need not acquire the most extensive and specialized training to rationally adjudicate between disagreeing experts. Moreover, the doctor at the lowest level of expertise can judge the doctor at the highest level of expertise. The general education of the lowest level of education, according to Aristotle, is quite broad. He seems to suggest that a mother who medically treats her child at home counts as a doctor in the lowest and general sense.¹⁹⁶ So, contrary to Brewer, Aristotle doesn't draw a sharp boundary between novices and experts and their respective epistemic competence. Aristotle thinks that expertise falls on a continuum and epistemic competence is not exclusive to specialists.

4.2 Anderson's Optimism

Now that we have looked at Brewer's skeptical account to the novice/2-expert problem, and also discussed Aristotle's position, let's now consider the other pole on the spectrum of

¹⁹⁴ Ibid. 103.

¹⁹⁵ See Aristotle, *Politics*, Book III, Chapter 11, trans. Benjamin Jowett, *The Internet Classics Archive*, www.classics.mit.edu/Aristotle/politics.3.three.html. See also Lane (2014), 103.

¹⁹⁶ Lane (2014), 103.

solutions to the novice/2-expert problem: Elizabeth Anderson's optimism.¹⁹⁷ Lane argues that Anderson's view also reduces to the novice/2-expert frame, like Brewer, but instead of reducing the problem between choosing between two possible frauds, Anderson reduces the novice/2-expert position to what Lane calls the *novice/crackpot-expert* frame.

To understand why Lane calls Anderson's view of the novice/2-expert problem the novice/crackpot-expert frame, let us detail Anderson's account. First, Anderson agrees with Brewer that the novice, *qua* novice, cannot enter the first-order substantive debate among the experts.¹⁹⁸ But Anderson disagrees with Brewer on what second-order judgments are available to the novice. Contrary to Brewer's claim that the novice can only judge credentials (and can't really even do that on Brewer's account), Anderson believes that the novice can make three kinds of second-order judgments: judgments about credentials, judgments about honesty, and judgments about epistemic responsibility. These three kinds of judgments are entirely second-order on Anderson's view. Novices need not understand the content of the arguments that the scientists are making. The novices can rely solely on their second-order judgments of credentials, honesty, and epistemic responsibility.¹⁹⁹

Anderson understands these three second-order judgments of trustworthiness as follows. To judge *credentials* means that the novice has the ability to "judge whether testifiers are in a position to know the claims in question – whether they have access to the evidence and the skills to evaluate it."²⁰⁰ To judge the *honesty* of the expert the novice must be able to judge "whether testifiers are disposed to honestly communicate what they believe – not only to say what they

¹⁹⁷ See Elizabeth Anderson (2011), "Democracy, Public Policy, and Lay Assessments of Scientific Testimony." *Episteme*, 144–64.

¹⁹⁸ Lane (2014), 103.

¹⁹⁹ Anderson (2011), 145-146. Cf. Lane (2014), 103.

²⁰⁰ *Ibid.* 145-146.

believe, but to avoid misleading by reporting only selected beliefs, or beliefs liable to be misinterpreted without further explanation.”²⁰¹ This is tested in practice by the absence of evidence of external conflict of interest and also misleading statements.²⁰² Third, the novice must be able to judge whether “testifiers are responsive to evidence, reasoning, and arguments others raise against their beliefs.” This can take the form of the expert being willing to submit to external peer review and engage in the rules of proper argumentation.²⁰³

Lane agrees with Anderson that honesty and epistemic responsibility are useful but thinks that Anderson’s position suffers from a crucial flaw: Anderson thinks that most if not all cases of novice/2-expert problems will be a lopsided battle between credible scientists and a few crackpots.²⁰⁴ A potential problem of assessing credentials is credential assessment may lead to an infinite regress. For example, the reason why you trust this expert is because they are credentialed by a particular group of other experts, but the reason you trust those experts is because they were credentialed by previous experts, *ad infinitum*. This is problematic because it seems like you only trust credentials because of credentials. Anderson seems untroubled by an infinite regress of assessing credentials because she seems to think that the credentialed scientists in most cases will all be one on side. Lane thinks this view is overly optimistic and that many instances of novice/2-expert problems will not be as obviously one-sided as Anderson seems to think.

Additionally, Anderson seems to ignore the problems of independence raised by Goldman (2001) with respect to the problem of gurus and their followers.²⁰⁵ Lane thinks that

²⁰¹ Ibid.

²⁰² Lane, 103.

²⁰³ Ibid.

²⁰⁴ Lane (2014), 104.

²⁰⁵ Ibid.

Anderson doesn't seem to account for the alternative explanation as to why experts might converge on a view – because they aren't epistemically independent and suffer from the guru/follower problem.²⁰⁶

Lane thinks that Anderson's model might work for the climate science debate where there is overwhelming consensus from the experts, but in other cases of scientific disagreement, Lane is less confident that Anderson's model will be a viable one when the consensus is not as overwhelming.

Lane argues that a fundamental problem with both Brewer's and Anderson's accounts is that they don't really tell the novice *how* they ought to act upon the spectrum of revealed expert knowledge. The reason why Brewer's and Anderson's accounts don't sufficiently provide answers to this how-question, according to Lane, is due to the fact that both views assume that novices are insulated from the first-order debate. Lane thinks that this assumption is mistaken.

Lane states that three things can be taken away in regard to her discussion of Brewer's and Anderson's views.²⁰⁷ First, the dominant framing of the problem of lay judgement (by Brewer and Anderson) focuses too heavily on the second-order judgments of the novice. The focus is too much on *identifying experts* over *engaging with the experts* by engaging with their claims and arguments. Second, Brewer's skepticism suggests that novices ought to engage in the first-order debate by cultivating forms of judgments and knowledge at the first-order level. Third, Anderson's optimism suggests that novices should engage in the first-order debate by not limiting judgments of expert trustworthiness to only second-order judgments of features, but

²⁰⁶ Recall that the guru/follower problem is that if the followers of a guru are causally epistemically dependent on the guru, then the mere fact that there are plenty of followers of the guru does not add to the testimonial evidence of the guru himself.

²⁰⁷ Lane, 104.

rather the novice should develop a more robust understanding of epistemic responsibility and honesty that is grounded in the ability to make those judgments at the first-order level.²⁰⁸

4.3 Lane's Moderate Account²⁰⁹

As we discussed in the previous section, Lane thinks the central flaw of both Brewer's and Anderson's account is that they both assume that the first-order arguments made by experts is inaccessible to novices. Recall, the first-order level is the level of cognitive expertise, what Goldman calls the E-domain. Second-order judgments are judgements not about the E-domain content, but about the credentials or character of the expert. We will see later in this section that Lane calls Brewer's and Anderson's model *the empty container model* – because the flow of knowledge and information is solely from the experts to the novices. Lane's position is that novices ought to engage experts at the first-order level. On Lane's account, lay judgment of first-order scientific claims is sometimes necessary.²¹⁰ In order to explicate her account, Lane asks two questions: how is lay judgment of the first-order scientific claims *possible* and how can we *enhance* lay judgment of first-order scientific claims? Lane seeks to answer these two questions by looking at the ethical and epistemic norms necessary for successful lay judgment. Let's look at her answers to each of these questions.

Drawing on the work of Neil Manson and Onora O'Neill, Lane offers an explication of

²⁰⁸ Ibid., 104-105.

²⁰⁹ I will refer to Lane's account as a moderate one because it is neither skeptical (Brewer) nor optimistic (Anderson). Other moderate positions concerning solutions to the novice/2-expert problems include Socrates' mildly pessimistic position and Goldman's mildly optimistic position. I would characterize Lane's position and my own closer to Goldman's moderately optimistic position. Recall that the attitudes of skepticism, pessimism, and optimism concern the novice's ability to accurately judge between two disagreeing experts.

²¹⁰ Ibid. 106.

her view based on Manson's and O'Neill's *agency model of communication*.²¹¹ This model isn't specifically for the communication between scientific experts and laypersons, but a general model for communication. Briefly, the agency model of communication involves a robust interdependence of communication between the speaker and the hearer. Contrary to the container or conduit models of communication, Manson and O'Neill argue that the agency model of communication better captures the essence of communication than the container model - which involve the mere dumping of information from the expert to the novice. The reason the agency model better captures the essence of communication is because "communicating and informing are types of *action* and *interaction*, so depend on a normative framework against which such action succeeds or fails."²¹² Manson and O'Neill further explain the agency model and what it means acts of informing (and communicating in general) to succeed. They write:

Acts of informing (and communication more generally) *only* succeed within a rich practical and normative framework in which speaker and audience (a) *have* certain practical and cognitive commitments; (b) *know something of each other's* cognitive and practical commitments; (c) *adhere* to, and act in accordance with, relevant communicative, epistemic, and ethical norms; and (d) *assume that* the other party is acting in accordance with such norms. The conduit and container metaphors hide, or radically downplay, these essential aspects of communicative activity.²¹³

Manson and O'Neill explain that these four conditions of successful informing can be captured by a list of concomitant epistemic and ethical norms. Manson and O'Neill's list of epistemic and ethical norms include: (1) statements made by experts need to be *intelligible* and *relevant* to their audience and (2) statements need to be accurate and accessible (not lying, manipulating, deceiving, making the necessary caveats, etc.).²¹⁴

²¹¹ Neil C. Manson and Onora O'Neill, (2007), *Rethinking Informed Consent in Bioethics*. Cambridge: Cambridge University Press.

²¹² *Ibid.*, 27. cf. Lane (2014), 106.

²¹³ Manson and O'Neill (2007), 40.

²¹⁴ *Ibid.*, 64.

This agent model of communication is important for Lane's account of trusting experts and my account of trusting experts who have converted.

Lane has her own list of epistemic and ethical norms by which she thinks successful informing and communicating depends. I'll focus on Lane's norms for the remainder of this chapter. Lane offers five epistemic and ethical norms that she thinks are necessary for successful informing and communicating between scientific experts and lay judges (policymakers).²¹⁵ They include: (1) Honesty (2) Precision (3) Audience relevance (4) Process transparency and (5) specification of uncertainty about conclusions.

In her paper with Robert O. Keohane and Michael Oppenheimer, Lane (2014) argues that honesty from the experts is non-negotiable, but that the other four may come with sorts of trade-offs for successful communication to occur. Following Lane, I'll only focus on the non-negotiable norm for experts: honesty.

Lane's notion of honesty is similar to Anderson's notion of epistemic responsibility. Experts must be willing to submit to external peer review and to engage in rational argumentative dialogue.²¹⁶ Lane differs from Anderson insofar as Lane takes it that she is operating under an agent model of communication which occurs at the first-order level of the content and arguments of science and is *a mutually iterative process* between expert and novice whereas she sees Anderson's model (and Brewer's) operating under a container model of communication that is one directional and not mutually iterative.

Lane goes on to explain that each of the norms for the experts to abide by has a

²¹⁵ Robert O. Keohane, Melissa Lane, and Michael Oppenheimer (2014), "The ethics of scientific communication under uncertainty", *Politics, Philosophy and Economics* 13 (4): 343-368. For the purposes of my argument, we will assume what Lane says about lay judges and policy makers is applicable for novices generally.

²¹⁶ Lane (2014b), 107.

corresponding set of norms for the novice to abide by. Moreover, the norms for the novices involve a set of epistemic (and ethical) virtues which are necessary to develop the *ability* and *disposition* to abide by the norm.²¹⁷

In regard to the norm of honesty, honesty is more than, contra Anderson, the absence of evidence of external conflict of interest and the avoidance of misleading statements. Lane cites Linda Zagzebski, who writes concerning the virtue of honesty that it's not sufficient for honesty that the person says what they believe is the truth, they must also be careful with the truth.

Zagzebski writes:

[I]t is not sufficient for honesty that a person tells whatever she happens to believe is the truth. An honest person is careful with the truth. She respects it and does her best to find it out, to preserve it, and to communicate it in a way that permits the hearer to believe the truth justifiably and with understanding.²¹⁸

With respect to the ethical dimension of this norm, Zagzebski thinks that honesty falls under the category of a moral virtue, yet she does think that in order to possess this moral virtue, the honest person must also possess a range of intellectual virtues. These intellectual virtues apply both to experts and novices. Zagzebski claims that the honest person, both the expert and the novice, “must be attentive, take the trouble to be thorough and careful in weighing evidence, be intellectually and perceptually acute, especially in important matters, and so on, for all the intellectual virtues”²¹⁹

What are the corresponding norms for the norms of accuracy and process transparency?

Lane argues that for speakers (usually the experts) accuracy and transparency, which are usually

²¹⁷ Lane (2014a), 107.

²¹⁸ See Linda Zagzebski (1996), *Virtues of the Mind: An Inquiry into the Nature of Virtue and the Ethical Foundations of Knowledge*, Cambridge: Cambridge University Press, 158. cf. Lane (2014a), 108.

²¹⁹ Zagzebski (1996), 159. cf. Lane (2014a), 108.

more one-sided, must be gauged in relation to the need to be intelligible to their intended audiences.²²⁰ In order for this communication to be successful, experts have a responsibility to make clear their intended audience. At the same time, novices have a corresponding responsibility. According to Lane, the novice has a responsibility to consider the limitations and possible misconceptions of the speaker's knowledge of their intended audience and to take care to observe any discrepancy between the speaker's knowledge of their *intended audience* versus the *actual audience*.²²¹

Lane notes that the responsibility of the novice in attending to the knowledge of the speaker's intended audience is particularly important with respect to "overheard" or "over-the-shoulder" instances of leaked information. For example, Lane cites the instances of leaked information concerning correspondence between climate scientists. The leaked information can be taken out of context by a lay person who is not doing their due diligence in taking into consideration the expert's intended audience and therefore can distort the substantive content of the kind and severity of the uncertainty.²²² For example, there were emails shared between climate scientists that were hacked and disseminated on the internet and picked up by climate skeptics. One climate scientist, Kevin Trenberth, wrote "'The fact is that we can't account for the lack of warming at the moment, and it is a travesty that we can't".²²³ This was picked up by climate skeptics and taken out of context to demonstrate that there was uncertainty among experts concerning climate change. Unfortunately for the climate skeptics, the quote, when read in context is referring to the need for better monitoring of the energy flows involved in short-

²²⁰ Lane (2014a), 108.

²²¹ Ibid.

²²² Ibid., 108.

²²³ See Wikipedia (2021), *Climate Unit Research email controversy*, https://en.wikipedia.org/wiki/Climatic_Research_Unit_email_controversy.

term climate variability, not doubt concerning whether the climate in general is getting warmer.

What are these kinds of uncertainty and risk-assessment? Lane describes three. First, there is what Lane calls intrinsic uncertainty. *Intrinsic uncertainty* is uncertainty that arises from the scientific phenomenon itself. For example, there will always be some degree of uncertainty in any scientific model trying to predict the forecast given that nature seems to have an element of uncertainty “built in.” The second kind of uncertainty is what Lane calls conditional uncertainties – uncertainties that are conditional on the current scientific models. Kinds of conditional uncertainties include model and parameter uncertainty. *Model uncertainty* is uncertainty about what scientific model to use and *parameter uncertainty* is about how to set the parameters of the models.²²⁴ The third kind of uncertainty mentioned by Lane is what she calls competitive uncertainty. *Competitive uncertainty* occurs when there are disagreements among different scientific teams working on the same problem, or disagreement among scientists in one discipline and scientists from a subfield. Lane thinks that competitive uncertainties arise from disagreements about intrinsic and conditional uncertainties.²²⁵

We can see that it’s possible, particularly for a novice who simply “overhears” the uncertainty expressed by a scientific expert to confuse or conflate the kind of uncertainty the expert was intending to express. For example, a novice can read a leaked email between two climate scientists in which one scientist expresses uncertainty about the parameter settings on a particular scientific model and the novice can interpret that as an intrinsic uncertainty about climate science models generally. This might lead the lay person, unjustifiably, to conclude that because there might be uncertainty concerning the parameters of a particular climate science

²²⁴ Lane (2014a), 109.

²²⁵ *Ibid.*, 109.

model that the intrinsic uncertainty of all climate models is very high and that climate science as a whole is dubious.

Novices can be vulnerable to biases when dealing with uncertainty, but so can experts. In particular, there is a problem for experts with respect to being vulnerable to an overconfidence bias. For example, Lane mentions the study done by J.D. Sterman (2011) that was discussed in chapter three. Recall Sterman's study in which both experts and novices share a common tendency towards overconfidence bias. Sterman writes:

We violate basic rules of probability and do not update our beliefs according to Bayes' rule. We underestimate uncertainty (overconfidence bias), assess desirable outcomes as more likely than undesirable outcomes (wishful thinking), and believe we can influence the outcome of random events (the illusion of control). We make different decisions based on the way the data are presented (framing) and when exposed to irrelevant information (anchoring). We credit our personal experience and salient information too highly and underweight more reliable but less visceral data such as scientific studies (availability bias, base rate fallacy). We are swayed by a host of persuasion techniques that exploit our emotions and our desire to avoid cognitive dissonance, to be liked, and to go with the crowd...*scientists and professionals, not only "ordinary" people, suffer from many of these judgmental biases.*²²⁶

There is more evidence that both experts and novices tend toward overconfidence when making judgments concerning uncertainty. For example, Lane cites a paper by Morgan and Mellon (2011) in which Morgan and Mellon state the following: "There is clear experimental evidence that both experts and laypeople are systematically overconfident when making judgments about, or in the presence of, uncertainty"²²⁷

What are Lane's suggestions for improving the tendency toward bias on the part of both

²²⁶ J.D. Sterman (2011), 816, emphasis mine. cf. Lane (2014), 109.

²²⁷ See M. Morgan and C. Mellon (2011), "Certainty, Uncertainty, and Climate Change." *Climatic Change*, 108: 709. cf. Lane (2014a), 109. Sterman provides more evidence that experts are also subject to bias when he cites the following authors. See Robert Cialdini (2009), *Influence: science and practice*, 5th ed., Boston: Pearson; Terry Connolly et. Al (2000), *Judgment and decision making*, 2nd ed., Cambridge: Cambridge University Press.

the expert and the novice? What norms ought the experts and novices abide by? Lane suggests that both experts and novice should do the following. First, experts and novices should abide by the norms that “include the explicit recognition of uncertainty in speaking and in receiving communications about scientific knowledge, and explicit self-reflection as to whether one is responding to such uncertainty correctly”.²²⁸ Lane thinks that in light of potential bias had by experts and novices, the norms of *accuracy* and *relevance* might have trade-offs so that the full force of the argument is realized by the novices. For example, in order for an expert scientist to get their point across about the severity of the risk involved in climate change, they might have to sacrifice the norm of accuracy for the sake of successfully communicating. Lane cites McGeer and Pettit (2009) who emphasize that scientist might have a duty to not only make a good case for their view but to also persuade their audience so that the audience can “feel the force of what you have to say”.²²⁹ Put another way, the scientist needs to be able to assist the novice in evaluating the first-order content.²³⁰

In addition to experts developing their rhetorical skills, Lane suggests that in combating the tendency to discredit scientific research on the basis of uncertainty, an Aristotelian principle ought to be taught to experts and novices. In his *Nicomachean Ethics*, Book I, chapter 3, Aristotle writes the following:

Our discussion will be adequate if it has as much clearness as the subject-matter admits of, for precision is not to be sought for alike in all discussions, any more than in all the products of the crafts...it is the mark of an educated man to look for precision in each class of things just so far as the nature of the subject admits; it is evidently equally foolish to accept probable reasoning from a mathematician and to demand from a rhetorician

²²⁸ Lane (2014a), 110.

²²⁹ See Victoria McGeer and Philip Pettit (2009), “Sticky Judgement and the Role of Rhetoric.” In R. Bourke and R. Geuss (eds), *Political Judgement: Essays for John Dunn*, Cambridge: Cambridge University Press, 65. cf. Lane (2014a), 110.

²³⁰ Tom Senor pointed this out to me.

scientific proofs.²³¹

Here Aristotle is suggesting that levels of precision, or the degree of uncertainty that is a consequence of the nature of the discipline, will differ from discipline to discipline. So, when experts and novice are making judgments with respect to scientific fields, they ought to keep in mind that the nature of the discipline will entail degrees of uncertainty. That a scientific discipline, on the Aristotelian view, contains intrinsic and conditional uncertainties, isn't reason to think that the scientists don't know what they are doing, but rather, that they are actually practicing science correctly.²³² This Aristotelian principle is important for both experts and novices to keep in mind so as not to conflate the three kinds of uncertainty discussed above.

There are other cognitive biases shared by both experts and novices. Recall that Sterman states that not only are experts and novices subject to overconfidence biases, but they are both also vulnerable to framing effects, anchoring effects, committing the base-rate fallacy, wishful-thinking, availability biases, and host of other biases. This might tempt people to believe that nothing can be known and that we are doomed to skepticism concerning our knowledge of the world. Sterman thinks that there is a reason to hope that we aren't all doomed to the epistemically pernicious effects of cognitive biases. Scientists, according to Sterman, can practice and cultivate thinking in terms of scientific methodology. The scientific methodology is an "iterative, interactive learning process" that can safeguard scientists against their cognitive biases. Sterman suggests that this is a primary difference between scientific experts and the novices who are reluctant to accept their testimony. The former is engaged in this kind of

²³¹ See Aristotle, *Nicomachean Ethics*, Book I, Chapter 3, trans. W.D. Ross, Internet Classic Archives, <http://classics.mit.edu/Aristotle/nicomachaen.1.i.html>., cf. Lane (2014a), 110.

²³² See Lane (2014a), 110.

iterative, interactive learning process while the latter are not.²³³

A solution for bridging this gap between the scientific experts who practice this process of scientific reasoning and the novices who do not is to create ways in which novices can, at least in part, partake in the research process of scientific study. Sterman suggests that novices can be allowed to partake in some of the research that goes on in the scientific study. By allowing novices to partake in “the context of discovery” of scientific research, by perhaps observing climate simulation models, this will have an effect on the receptivity of the testimony of the scientists in “the context of communication”.²³⁴

Lane thinks that by providing these sorts of opportunities to the lay public, scientists can train lay persons to cultivate the habits of mind necessary for recognizing and properly judging the kinds of uncertainty involved in scientific research. This is similar to Brewer’s suggestion that in order to solve the novice/2-expert problem, novices should become epistemically competent. Brewer’s suggestion was for the novice to obtain an undergraduate degree in the relevant domain. We mentioned earlier that this seems too demanding and impractical. Lane thinks that these kinds of educational opportunities for the lay public might be a means of cultivating the habits of mind in the novices in order to recognize and make informed judgments concerning scientific claims while not requiring the demands of an undergraduate degree in the relevant domain.

Goldman suggests a similar solution when he discusses how a novice might be able to judge the claims of disagreeing experts by evaluating their arguments in an *indirect way*. For example, Goldman writes the following concerning indirect argumentation and the sort of

²³³ Sterman (2011), 823. cf. Lane (2014a), 112.

²³⁴ Lane (2014a), 112.

justification it might confer on the novice:

The idea of indirect argumentative justification arises from the idea that one speaker in a debate may demonstrate dialectical superiority over the other, and this dialectical superiority might be a plausible *indicator* for N of greater expertise, even if it doesn't render N directly justified in believing the superior speaker's conclusion.²³⁵

Goldman thinks that the novice might not be able to engage with the content of the arguments of the experts in a direct way, but they might be able to engage with the arguments of the experts in an indirect way by being attentive to certain plausible indicators of greater expertise. What are these indicators that Goldman thinks might provide the novice with at least indirect evidence that one expert might be closer to the truth than the other?

First, Goldman doesn't think that debating ability is a good indicator that the expert possesses greater expertise and is hence more likely to be correct than the other disagreeing expert. The kinds of indicators that Goldman has in mind include (1) the ability to provide rebuttals and defeaters to the opponent's arguments and (2) comparative intellectual quickness and smoothness with respect to responding to opponent's arguments. With respect to (1), Goldman thinks, all things considered, if one expert is able to respond to their opponent's arguments with what seem to be good rebuttals and defeaters and the other isn't able to respond as well, then it is reasonable to think the former expert possess greater expertise. A similar line of reasoning is made by Goldman with respect to (2). All things considered, if one expert is comparatively more intellectually quick and smooth than their opponent, then this can provide some evidence that the former is a greater expert than the latter. Goldman emphasizes that this indirect sort of reasoning is to be understood as an inference to the best explanation or an explanatory inference as to which expert is greater and hence more likely to be correct.²³⁶

²³⁵ Goldman (2001), 95. cf. Lane (2014a), 112.

²³⁶ Goldman (2001), 96-97.

Lane develops this idea of indirect assessment of experts by citing others who also think that novices have the potential to develop certain intellectual skills that allow them to judge experts in an indirect manner so that they need not become experts themselves.²³⁷ In particular, Lane discusses the work of Linda Zagzebski who thinks that there is higher-order intellectual virtue, cognitive integration, which is a consequence of good intellectual character, that is similar to Goldman's discussion of indirect argumentation and the novice's ability to recognize reliable indicators of expertise.²³⁸

Wrapping up Lane's moderate view, she thinks three things can bridge the gap between experts and novices such that novices can engage with the content of the expert's claims at the first-order substantive level (as opposed to only being able to make second-order judgements about first-order scientific claims as held by Brewer and Anderson). The three ways to bridge the first-order gap between experts and novices and hence to solve the novice/2-expert problem, according to Lane, are the following: (1) both parties need to develop a common self-awareness concerning the norms of communication. This involves carefully attending to the norms of effective communication on the parts of the experts (know your audience and be explicit about intended audience) and the novices (be attentive to the expert's intended audience and actual audience). (2) engage in a common process of learning. Specifically, focus on providing opportunities for novices to practice thinking like scientific experts and cultivating the habits of mind of a scientist. (3) Develop a good intellectual character. Scientists should be attentive to the role rhetoric plays in communicating their ideas to others. Moreover, scientists should develop

²³⁷ Lane (2014a), 112. See for example Philip Tetlock's (2009) discussion of "meta-cognitive skills" in *Expert Political Judgment: How Good Is It? How Can We Know?* Princeton: Princeton University Press, 23.

²³⁸ See Linda Zagzebski (2012), *Epistemic Authority: A Theory of Trust, Authority, and Autonomy in Belief*, Oxford: Oxford University Press, 275. cf. Lane (2014).

the intellectual virtue of honesty. Novices ought to develop the cognitive virtue cognitive integration, which is a consequence of having a good intellectual character. The obligation is *epistemic* in nature. Failing to cultivate a good intellectual character, whether an expert or a novice is an epistemic failure. This kind of epistemic failure is a failure to be rational with respect to the beliefs one holds.²³⁹

Lane doesn't develop or discuss Zagzebski's discussion of cognitive integration and good intellectual character in much detail. In the following section, I'll discuss Zagzebski views concerning good intellectual character, specifically focusing on her discussion of intellectual self-conscientiousness. After detailing Zagzebski's account, I'll apply the Moderate Lane-Zagzebski solution to the novice/2-expert problem to the more specific problem of converting experts in which I seek to answer the main question of this chapter: how ought novices appropriately respond to instances of expert conversion?

²³⁹ Tom Senor raises the following objection: Does someone who withholds judgment when experts disagree fail in her epistemic duties? My response is it depends. First, withholding judgment when faced with expert disagreement can be justified, but sometimes pragmatic considerations may render an agnostic position epistemically irresponsible. For example, suppose there is expert disagreement concerning a particular treatment for a child who has a rare disease. To abstain from judgment concerning which treatment to use I think would be an unjustified position even if the risk of each treatment is very uncertain. Senor also asks whether the farm laborer fails in her epistemic duties if she fails to think like a scientist. Again, it depends. If the farm laborer is going to be voting for particular political candidates whose platform will affect policy concerning climate change then I do think the farm laborer bears some epistemic responsibility to cultivate her intellect to the best of her ability.

5 Zagzebski on conscientiousness and an epistemology of trust

Linda Zagzebski (2012) argues that trust in authority is rational.²⁴⁰ Her argument is detailed, but roughly, she argues as follows: Self-trust is rational, if self-trust is rational, then trust in others is rational. Therefore, trust in others is rational. In defense of this argument, she writes:

The fact that someone has a belief *p* gives me a prima facie reason to believe *p*. The fact that someone whom I conscientiously believe is conscientious believes *p* gives me a stronger prima facie reason to believe *p*... What the principle of epistemic trust in others shows is that I cannot treat other persons as simply sources of evidence for me like a computer or a clock. If I choose to treat them that way, I must treat myself that way. But I cannot treat myself that way. Reflection on trust in my own faculties forces me to extend my trust to all those persons relevantly like myself. Trust is a first-person reason for belief.²⁴¹

Here, Zagzebski's notion of self-trust entailing trust in others can be applied to Lane's account in the following way: A novice, if they trust themselves, and possess a good intellectual character, ought to extend that trust to the experts whom they judge to be relevantly similar to themselves.

How does Zagzebski understand trust? She writes:

I think that a state of trust is a hybrid of epistemic, affective, and behavioral components. As a first approximation, I propose that when I trust *x* for purpose *y*, (1) I *believe* *x* will get me *y*, (2) I *feel* trusting towards *x* for that purpose, and (3) I *treat* *x* as if it will get me *y*. I do not claim that all three components of trust are necessary in every instance, but I think they are present in standard cases.²⁴²

It's important to note that, on Zagzebski's model of trust, legitimate trust involves not only intellectual assent but also involves an affective and volitional dimension. This is significant because of the discussion of certain biases mentioned by Sterman, in particular, I am thinking of certain emotional biases and susceptibility to rhetorical tricks can have a pernicious effect on the

²⁴⁰ Zagzebski (2012), 68.

²⁴¹ Ibid.

²⁴² Ibid., 37.

reasoning of novices. I think it's important that the cognitive, affective, and volitional aspects of the human person are considered when discussing epistemic deference to others. Now that we have outlined Zagzebski's views in more detail, let's apply the Lane-Zagzebski solution to the novice/2-expert problem to the particular problem of disagreeing experts that I want to address: the problem of expert conversion and how novices ought to respond in an epistemically appropriate way.

5.1 Applying the Lane-Zagzebski solution to the problem of expert conversion

Recall that I've argued that the problem of expert conversion is a type of the novice/2-expert problem. This is because when an expert converts, they are disagreeing with their previous selves, as well as often disagreeing with the expert consensus (although not always). I think that the Lane-Zagzebski solution to the novice/2-expert problem can provide helpful insight in what a novice ought to do when faced with this kind of expert disagreement. Recall Lane's three takeaways with respect to bridging the gap between experts and novices. (1) Both are self-aware, (2) both are engaged in common learning and (3) both exhibit good intellectual character. How can we apply these three aspects of Lane's solution to the problem of converting experts?

5.1.1 Both converting expert and novice are engaged in self-awareness

Recall that for effective communication to occur between expert and novice, the expert needs to be attentive to their intended audience and be explicit about who their intended audience is when trying to communicate information. Additionally, the novice has the responsibility to recognize any discrepancies between the speaker's knowledge of the intended audience and the actual audience.

A particular example of communication failure, and failure of self-awareness, might be something like a scientist who has converted from atheism to Christianity who gives a talk to a small rural church. The scientist discusses reasons why he converted, some of which have to do with science, but most of which are more philosophical in nature. Suppose this scientist still believes that evolution is true yet is skeptical that evolution is possible without some sort of teleology that can only be grounded in the existence of God. It's possible that the converting scientist may not possess enough self-awareness to clearly distinguish his philosophical reasons for converting from his scientific reasons (that don't primarily bear on the reason for his conversion).

If a failure of this sort occurs, I do not think that the novice possesses any additional evidence in believing the proposition the expert is asserting, e.g., that God exists.²⁴³

5.1.2 Both converting expert and novice are engaged in common learning

What does it look like, in the context of expert conversion for both the expert and the novice to be engaged in common learning? First, I think something similar to what Lane suggests with respect to experts allowing novices to participate in the process of scientific research could apply to cases of expert conversion. The converting expert could take the time to develop a sort of simulation and model for why they converted and allow the novices to partake in this model. An example of this might be a computer simulated climate model that shows how climate changes over time. There needs to be some way that the expert and novice engage in common learning. This seems to be the case with Rheticus and Copernicus. Copernicus invited Rheticus

²⁴³ The sort of novice I am focusing on in this example is a novice who already believes in God. If the novice does not already believe in God, then he may gain additional evidence for his belief that 'there are no scientifically minded theists' if he encounters the theist mentioned above. Tom Senor helped me see this point.

to come and see his new model and to apprentice under Copernicus for both Copernicus and Rheticus to engage together in common learning. What followed from this mutual engagement in common learning is that Rheticus came away as a new convert to the heliocentric model.²⁴⁴

A contemporary example of what this sort of model-based learning would look like might be something like the debate between astrophysicists concerning theories of the origin of the universe. For the past 50 years, Big Bang cosmology has been the paradigm theory for the origin of the universe. Yet the theory has its dissenters. Sir Roger Penrose proposes what is called a conformal cyclical cosmology that differs from big bang cosmology in postulating an infinite series or cycles of big bang singularities and universes prior to the big bang of our universe.²⁴⁵ A way for novices to enter this debate may be for a model to be created in which the different theories of the universe are computer simulated and the professors take time to give presentations to college students arguing in favor of their model. This could also be made available to the public for those interested to come and participate in the event.

5.1.3 Both converting expert and novice possess a good intellectual character

What would it mean for both the converting expert and the novice to possess good intellectual character? Let's now turn to a more detailed account of good intellectual character in which I'll develop Zagzebski's account of trust in others and apply it to the particular problem of expert conversion. I'll discuss under what conditions it's legitimate for novices to trust experts

²⁴⁴ Rheticus and Copernicus would both be considered experts, so the example isn't completely analogous to an expert and novice engaging in common learning. Given that it has been argued that expertise comes in degrees, a model for expert/novice common learning can also apply to greater expert/lesser expert models as well.

²⁴⁵ See Ethan Siegel (2020), "No, Roger Penrose, We See No Evidence Of A 'Universe Before The Big Bang'," Forbes, <https://www.forbes.com/sites/startswithabang/2020/10/08/no-roger-penrose-we-see-no-evidence-of-a-universe-before-the-big-bang/?sh=5adc60c97a0f>.

and under what conditions experts are worthy of trust. Let's turn to Zagzebski's account of when it is legitimate to trust in others.

Earlier, it was argued that trust in others involves (1) *believing* that the testimony of the other person will get you to the truth (2) *feeling* like the testimony of the other person will get you closer to the truth and (3) *acting* as if trusting the other person will get you closer to the truth.²⁴⁶ When does Zagzebski think that it's legitimate to defer to others? She thinks legitimate trust in others can occur when the person doing the trusting is *conscientiously self-reflective*. According to Zagzebski, *epistemic conscientiousness* is "...the quality of using our faculties to the best of our ability in order to get to the truth..."²⁴⁷ The reason conscientiousness is important is because we don't think that we are equally trustworthy at all times. Moreover, we think there is a connection between *trying our best* at believing the truth and *success* in believing the truth. A reflective person, someone who believes that the full use of one's reflective powers, that is, someone who cognitively tries their best at believing the truth, is more likely to be successful in believing the truth. For this reason, Zagzebski thinks that conscientious comes in degrees.²⁴⁸ Most of us, according to Zagzebski, are conscientious to some degree most of the time, but high degrees of conscientiousness require a great deal of self-awareness and self-monitoring.²⁴⁹

²⁴⁶ Zagzebski writes, "when I trust *x* for purpose *y*, (1) I *believe* *x* will get me *y*, (2) I *feel* trusting towards *x* for that purpose, and (3) I *treat* *x* as if it will get me *y*." In this case, I have filled in *y* with 'the testimony of the other person will get me closer to the truth' and *x* with 'the converting expert'.

²⁴⁷ Zagzebski (2012), 48.

²⁴⁸ This will prove useful when applying her account of conscientiousness to the problem of expert conversion. The more conscientious the converting expert, the more the novice will be able to recognize that the expert is trustworthy and the more conscientious the novice, the more they will be able to successfully recognize and defer to the correct expert.

²⁴⁹ Zagzebski (2012), 48-49.

Zagzebski argues that there are *two levels of epistemic trust*: a *general* trust in one's faculties (this is a basic belief) and a *particular* trust that conscientious self-trust is the most apt at getting to truth.²⁵⁰ She notes that conscientious is the ground for the intellectual virtues because the reason we think the intellectual virtues are *virtuous* is because we think possessing those virtues render an epistemic agent most apt for successfully getting at the truth.

Here we can begin to see what it means for both an expert and novice to possess a good intellectual character. Both the expert and novice possess a good intellectual character when they are both epistemically conscientious.

Zagzebski goes on to argue that our conscientious self-reflection (these two levels of trust) is basic and that the only way to determine whether a belief is true is if it passes our future self-reflection. According to Zagzebski, conscientious self-reflection is the fundamental bedrock of our psychic economy.²⁵¹ So, Zagzebski concludes, based on the previous reflections, that epistemic self-trust is rational. She writes:

Epistemic self-trust is rational in the sense I have described, and it is more rational than alternatives in that it requires making the fewest adjustments in the prereflective self. Self-reflection is what a self-conscious being does, and a rational being does it carefully. However, it is possible to go on reflecting forever about whether x is trustworthy in respect to y. Trust ends the process of reflection, and it is rational because excessive reflection is not rational. Trust prevents excessive reflection, and in my view, it is an essential component of a rationally self-reflective being.²⁵²

She goes on to argue that if self-trust is rational, then trust in others is rational. The reason is because rational self-trust can be the basis or reason for trust in others. Self-trust, according to Zagzebski, serves as a reason for trust in others because it is in virtue of self-trust that a *conscientious* agent takes to be reasons for believing p are *truth-indicators*. For example, I

²⁵⁰ Ibid., 49-50.

²⁵¹ Zagzebski (2012), 50.

²⁵² Ibid., 45.

believe that there is a laptop in front of me in virtue of my self-trust.²⁵³ Self-trust is a first-personal reason for belief, that is, it is a reason that only I can have.²⁵⁴ Zagzebski argues that either self-trust counts as reasons for belief, or we don't have any reasons. Self-trust is the foundation for rationality. Zagzebski extends her account of the epistemic rationality of self-trust to trust in others based on the following principle:

The Principle of Epistemic Trust in Others

In any case in which, by believing in a way I trust in myself, I am led to believe that others have the same property I trust in myself (to the same degree I have myself), I have a prima facie reason to trust them as much as I trust myself.²⁵⁵

The most salient property that Zagzebski thinks is pertinent to extending trust in others is conscientiousness. Before discussing in more detail how Zagzebski connects the property of conscientiousness with epistemic trust in others, I'd like to explain what she says concerning two types of reasons and the kind of reason she thinks the principle of epistemic trust in others provides. The two kinds of reasons that Zagzebski discusses in this context are theoretical reasons and deliberative reasons. *Theoretical reasons* are third-personal "reasons for believing p which are facts that are logically or probabilistically connected to the truth of p."²⁵⁶ They are facts about the world, not intrinsically connected to believing, can be shared with others, and what we normally think of when we think of 'evidence'. In contrast, *deliberative reasons* are first-personal "reasons that have an essential connection to me and only me in my deliberations

²⁵³ Eric Funkhouser states that he believes that the laptop is in front of him because he sees it. I take it that Zagzebski would agree with him on this point. For Zagzebski, self-trust is understood as trust in one's faculties to arrive at the truth. In the case of seeing the laptop, Zagzebski and Funkhouser agree that they believe that there is a laptop in front of them because they 'see it' or believe that their cognitive faculties are trustworthy.

²⁵⁴ Ibid., 51.

²⁵⁵ Zagzebski (2012), 68.

²⁵⁶ Ibid., 64.

about whether p".²⁵⁷ One of the primary differences between theoretical reasons and deliberative reasons is that the former connect facts about the world to the truth of p, the latter connects the epistemic agent to the truth of p in a first-person sort of way.²⁵⁸ One example that Zagzebski gives that distinguishes theoretical and deliberative reasons is from the nature of having an experience. She thinks that the fact that person A has an experience can count as a theoretical reason for B because A can tell B about their experience. But the experience can only count as a deliberative reason for A because A was the person who had the experience. Moreover, the experience will have a rational, emotional, and behavioral responses in A that won't occur in B.²⁵⁹

Zagzebski argues that self-trust is a state that provides deliberative reasons to believe. This is because it is a first-person reason and epistemically relevant only to the person who has it. Moreover, trust in others is also a state that provides deliberative reasons to believe rather than theoretical reasons to believe some proposition P because person A's reason is based on the similarity of person B to person A and person A's trust in *himself*. This is not a reason that others can use in determining whether P.²⁶⁰

Now that we have an account of trust, an explanation of the rationality of self-trust, how self-trust extends to trust in others, and the kind of first-person deliberative reasons to believe that trust in others provides, we can see how Zagzebski connects her account of trust in others with what she has already said concerning the intellectual virtue of conscientious self-reflection.

²⁵⁷ Ibid.

²⁵⁸ Zagzebski (2012), 64.

²⁵⁹ Ibid.

²⁶⁰ Ibid., 65.

Concerning conscientious self-reflection and how it connects to trust in others and the kind of reasons to believe that this trust provides, Zagzebski writes the following:

When a subject is conscientious the subject will recognize that the fact that someone else believes *p* give them a *prima facie* reason to believe *p* and they have a stronger reason to believe *p* if the person conscientiously judges that the other person has the same qualities he trusts in himself...I argued in chapter 3 only that the fact that another person believes *p* counts in favor of the credibility of *p*.²⁶¹

Here, we see that a person A may defer to another person B when A conscientiously judges that B has similar trustworthy qualities that A recognizes in himself. Put another way, according to Zagzebski, the fact that B believes P is sufficient for A to believe P if A and B are similarly conscientiously self-reflective. What are examples in which A conscientiously judges that B is relevantly similar to himself and thereby may have *prima facie* reason to believe P? Zagzebski writes:

When the subject judges that the other person is just as conscientious as the subject is and the other person's faculties are just as good, and so the other person's reasons are just as good as the subject's would be if the subject had any reasons, and the other person's reasons are pretty good.²⁶²

An example may be when I defer to a friend about the plausibility of a political policy that I don't have any firm view on. I judge my friend to be reasonably conscientious and his reasons seem pretty good. I trust his judgment because I judge him more or less equally conscientious. An example that would not be appropriate is if I deferred to a five-year-old who also happens to have an opinion on the same political policy (maybe she's parroting her conspiracy theory uncle). Generally speaking, five-year-olds aren't as conscientious as I am with respect to political policy judgments.

²⁶¹ Ibid., 103-104.

²⁶² Ibid., 104.

Here we see the kinds of things novices ought to be looking for when attempting to conscientiously judge between competing experts. The novice should look at the faculties of the experts. Here we see a connection with Goldman's suggestion of looking at the intellectual argumentation of the experts. Intellectual traits such as the ability to respond to objections and supply rebuttals to one's opponent as well as intellectual agility and finesse can all be ways a novice can recognize good cognitive faculties in another.

Yet, the kinds of cases Zagzebski is really interested in, and the kinds of cases which I take to be most salient to our discussion of expert conversion and the conscientiously self-reflective judgment of the novice involves cases in which person A (a novice) has reason to believe that person B (an expert) is *more likely* to get to the truth than A would by using their direct use of their faculties.²⁶³

Zagzebski elucidates on cases in which one person is more likely to get to the truth than another person when she writes the following:

I may conscientiously believe that another person is doing a better job of what I am trying to do when I am conscientious, that is, when I am trying to get the truth in some domain. The domain might be very narrow. Maybe I am an accomplished cook, but I trust the people who test bakeware for the Cook's Illustrated more than myself on the issue. It is my attempt to get the truth about baking that leads me to believe that they are doing a better job of it in this area. The domain can also be much broader. If I am not a cook, I might trust everything Cook's illustrated says about cooking equipment more than myself. And the domain can be broader still. *Scientific disciplines like biology and physics are large domains whose practitioners are not equally expert at all subfields within the discipline, but I might reasonably judge that they are more likely to get the truth about anything in the discipline than I am.*²⁶⁴

I'd like to point out a few connections between what Zagzebski says in this passage and what has been discussed above concerning the engagement in common self-awareness and common

²⁶³ Zagzebski (2012), 104.

²⁶⁴ Ibid., 105 emphasis added.

learning by both expert and novice. First, the degree to which both expert and novice are both self-aware concerning their respective epistemic responsibilities in successful communication will affect the amount of trust that is possible between them. What this means is that the expert and the novice will be epistemically closer, i.e., that epistemic gulf between expert and novice will be bridged to the extent that their self-awareness renders their communication more successful and thereby rendering their greater degree of trust to occur. Successful communication is essential for trust.

Second, to the extent that the expert and novice participate in common learning, by the expert allowing the novice to partake in the kind of reasoning process that the expert herself engages in, even if in an inferior way, the expert will allow the novice to grow in learning and knowledge of what the expert is trying to communicate. Hence, successful communication is made more likely if there is greater knowledge and understanding between the expert and novice. Truth is essential for trust.

Third, the more the first two occur (common self-awareness and common learning occur) the more the novice is able to engage in conscientious self-reflection and accurately judge who the competent experts are. This is because the more chances there are for successful communication and engagement in common learning, the novice will be in a better position to judge which experts are more likely than themselves (or even which experts are more likely than other experts to be in a position to get at the truth.)

Let's apply Zagzebski's account of trust with instances of expert conversion. Consider the following principle:

Legitimate trust in converting expert (LTCE): A novice, *n*, legitimately trusts in a converting expert, *e*, for the purpose of obtaining truth, *t*, when (1) *n* believes *e* will get them to *t*, (2) *n* feels trusting towards *e* for that purpose, and (3) *n* treats *e* as if it will get them to *t* and (4) *e* is *trustworthy* and (5) *n* is a *conscientiously self-reflective person*.

Like Zagzebski, I don't take these five conditions as a set of necessary and sufficient conditions. However, I think that at least sufficient conditions can be provided to guide the novice on how they ought to respond when they encounter an instance of expert conversion.

I think the most significant aspects of LTCE are (4) and (5). Let's consider what it means for an expert to be trustworthy. Consider the following principle:

Converting Expert trustworthiness (CET): A converting expert, *e*, is trustworthy, when *e*'s conversion is: (1) *epistemically significant* and (2) (a) *e* abides by the epistemic norms of communication, (b) engages in common learning, (c) and has a good intellectual character (is conscientious himself).

Concerning (1), recall in chapter three where I gave an account of when an expert's conversion is epistemically significant. Briefly, an expert's conversion is epistemically significant when the following is the best explanation of the expert's conversion: that the expert seemed to convert based on evidence and not based on bias.²⁶⁵

Concerning (2a), I've argued, by drawing from Lane and Zagzebski, that an expert abides by the norms of successful communication when they are self-aware and attentive to the norms of communication. These norms involve an epistemic responsibility on behalf of the expert to be honest. In particular, this means he should know who his intended audience is and make his intended audience explicit.

Concerning (2b), the expert is trustworthy if they invite novices to participate in a mutual learning experience in which the expert mentors and guides the novice in the kinds of expert reason and research that the expert herself engages in. This doesn't entail that experts that don't

²⁶⁵ Also remember that my account is a diagnostic rather than a set of necessary and sufficient conditions.

participate in mutual learning aren't trustworthy it just means that experts who do engage in mutual learning can be trusted.

Concerning (2c), the expert is conscientious. This means that the expert exhibits intellectual character traits such as intellectual humility. For example, the expert is conscientious when they do not overstep their bounds of expertise. Other intellectual virtues that an expert may have on the basis of being conscientious is that they are attentive to their audiences, they welcome constructive criticism of their work, and exhibit a willingness to help and engage with conscientious novices.

Let's also explain (5) in more detail. What does it mean for a novice to be a reflectively self-conscientious person? It means that they are conscientiously self-reflective themselves. They possess the particular intellectual virtues being attentive to the expert's intended audience, are humble in their recognition of their intellectual limitations, and desire in a healthy way to learn from the experts in a common engagement of mutual learning.

The principle of legitimate trust in experts can shed light on how the novice ought to respond to expert conversion. If the novice doesn't trust the expert, or the expert isn't trustworthy, or the novice is not a conscientiously self-reflective person, then these can all have effects on the epistemic appropriateness of legitimately deferring to significant expert conversion.

5.2 Practical examples of my account

Now that we have the principles of my account in hand, let's look at applying them to practical cases. In this first example, let's consider when things go well and in the second example, let's look at when things go bad.

Good Cases

Case 1

A novice would legitimately defer to a converting expert in a case in which the expert changes their mind concerning the danger of aerosol spread rather than just droplet spread. Suppose the expert works for a government agency that initially said that a virus only spreads via droplets. Later, the data suggests that the virus spreads not just via droplets but via aerosols (much smaller than droplets). The expert working for the government agency changes his mind and the novice legitimately trusts the expert. The expert has an incentive to not change their mind for non-evidential reasons in this case. The government agency that they work for is placing pressure on their experts to give an answer that this expert now believes is contrary to what the evidence supports.

Case 2

Another good case is one about public policy. Suppose an expert originally believed that the best public health policy with respect to controlling a viral pandemic was to allow for the virus to run through a population and to allow the population to achieve herd immunity by a fast burn of viral spread. Suppose further that the expert recognizes that this strategy is actually ineffective in the long-run and will actually lead to more deaths long-term. In this case, the novice would legitimately trust the expert in this case. This expert is pressured to support the fast herd-immunity strategy by political figures in her field, yet she sticks to her convictions about what she believes the evidence supports.

Bad Cases

Case 3

Suppose that an expert changes their mind concerning the efficacy of a vaccine. Previously, the expert believed that the vaccine was safe and efficacious in preventing disease.

Now, the expert claims that the vaccine has severe side effects that outweigh the benefits of the vaccine. Suppose further that you learn that the expert now has their own alternative therapy for treating the disease that isn't a vaccine. Upon a quick investigation, you can tell that the expert owns a very large and wealthy company that produces these alternative products. In this case, a novice would not legitimately defer to a converting expert.

Case 4

Suppose an expert says that a certain vaccine is immoral because it was derived from aborted fetal cells. The expert didn't previously believe that receiving a vaccine derived from aborted fetal cells was illicit and they don't say that it's illicit to receive other vaccines that are derived from aborted fetal cells. But for this particular vaccine, they believe it's illicit because it was derived from aborted fetal cells. In this case, the expert is holding to a double standard concerning the morality of vaccines and the novice would not legitimately defer to their change of mind.

5.2 Why, according to my account, the good cases are good, and the bad cases are bad.

My account properly diagnoses good cases as good and bad cases as bad for the following reasons. In the good cases, it seems to the novice that the expert has converted for evidential reasons and that there is a seeming absence of defeaters (biases or motivated reasoning) on behalf of the expert. According to my account, if it seems to the novice that the expert converts for evidential reasons and there's an absence of defeaters, then the novice legitimately defers to the testimony of the expert. This is because the best explanation of the expert's conversion, as it seems to the novice, is that the expert converted for evidential reasons.

On the other hand, in the bad cases, it seems to the novice that the expert has converted for either non-evidential reasons or for biased/motivated reasons. The expert either doesn't

seems to have evidential reasons for their conversion or they do have defeaters for their conversion. In these cases, the novice does not legitimately defer to the converting expert. This is because the best explanation for the expert's conversion is not evidential reasons but rather motivated or biased reasons.

In the good cases, the novice can take the expert to be trustworthy and self-conscientious and hence lead the novice into truth. In the bad cases, the novice judges the expert to not be trustworthy and self-conscientious and hence the expert would not likely lead to novice into truth.

6 Conclusion

In this chapter I answered how a novice should respond in an epistemically appropriate way. I detailed the ways in which it would be epistemically inappropriate for the novice to respond to instances of expert conversion. I gave a moderate account of an appropriate epistemic response to expert conversion that avoids the pitfalls of both extreme pessimism and extreme optimism. I developed my positive account based on Lane's moderate view concerning what to do when experts disagree and further developed the account based on principles from Zagzebski regarding the intellectual character trait of self-conscientiousness.

Conclusion

The main thesis of this dissertation is to give an account of when expert conversion is epistemically significant for a novice and how the novice ought to respond to the converting expert. By looking at the structure of conversions in general and the nature of expert testimony, I provided a useful background for answering the question of when an expert conversion is epistemically significant.

My account of when expert conversion is epistemically significant and how the novice ought to respond can be summarized by the diagnostic tool and epistemic principles below. First, for determining when an expert conversion is epistemically significant, the novice can look for the following:

Let EC stand for an expert conversion, ES stand for epistemically significant, and EB stand for evidence based.

An EC is ES iff:

(1) The EC is EB.

An EC is EB if:

(2a) *Social calibration condition* – when the expert converts, they are committed to using the same evidential standards, formalisms, and ontological schemes as the other experts in the debate.

(2b) *Appearance of evidence* – the expert seems to be converting on the basis of evidence.

(2c) *Absence of cognitive biases* – the expert doesn't seem to have any cognitive biases that would better explain the conversion.

(2d) *The expert makes reliably successful predictions and successful track-record* – the converting expert makes successful novel predictions based on their new view and has been reliable in the past.

Second, with respect to how the novice ought to rationally defer to a converting expert I offered the following principles:

Legitimate trust in converting expert (LTCE): A novice, *n*, legitimately trusts in a converting expert, *e*, for the purpose of obtaining truth, *t*, when (1) *n* believes *e* will get them to *t*, (2) *n* feels trusting towards *e* for that purpose, and (3) *n* treats *e* as if it will get them to *t* and (4) *e* is trustworthy and (5) *n* is a conscientiously self-reflective person.

Converting Expert trustworthiness (CET): A converting expert, *e*, is trustworthy, when *e*'s conversion is: (1) *epistemically significant* and (2) (a) *e* abides by the epistemic norms of communication, (b) engages in common learning, (c) and has a good intellectual character (is conscientious himself).

When a novice applies these two principles then she rationally defers to a converting expert.

My account of identifying when expert conversion is epistemically significant and how a novice ought to respond matters for the following reasons. First, there has been much literature devoted to the epistemological significance of expertise, expert testimony, and expert disagreement, but there has been much discussion about expert conversion in general and how expert conversion relates to expert testimony and expert disagreement. I think my account of expert conversion addresses problems in this area of social epistemology that are either not discussed or underdeveloped.

Another reason why my account of the epistemic significance of expert conversion matters is due to the practical applicability of my topic. My account is intended to be a true diagnostic tool that anyone can use to help them navigate difficult yet very common epistemic problems they encounter in their daily lives. Anecdotally, whenever I've discussed the topic of my dissertation with non-philosophers virtually all of them were immediately able to see how important and relevant the topic is for themselves.

A final reason, which is related to the previous reason, that my dissertation topic matters is because the topic has implications for many other disciplines. For example, my account can be applied to areas in science, medicine, technology, public health, nutrition, and possibly, politics, morality, and religion.

I think for future projects I'd like to see how my account could be applied to multiple expert conversions that occur in one direction. For example, suppose that a certain scientific position is held by fifty percent of experts. But further suppose that the split was closer to seventy-five to twenty-five but overtime there were a number of conversions to one side of the debate, but hardly any conversions to the other side of the debate. Does the fact that there is an asymmetry in conversion give us any additional reason to think the position is true over and above the fact that the expert testimony on each side is roughly fifty percent? I think my account on the epistemic significance might be able to shed light on this question.

A second interesting implication of my topic is asking whether my account can be applied to politics, morality, and religion. First, we'd have to discuss whether there are experts in these fields and whether there is transmission of knowledge to novices who rationally defer to them. If there are political, moral, or religious experts, and transmission of knowledge to novices is possible, then my account of the epistemic significance of expert conversion may have interesting implications for this area as well.

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