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APRIORITY IN NATURALIZED EPISTEMOLOGY: INVESTIGATION INTO A MODERN DEFENSE

by

JESSE G. CHRISTIANSEN

Under the direction of Dr. George W. Rainbolt

ABSTRACT

Versions of naturalized epistemology that overlook or reject apriority ignore innate belief-forming processes that provide much of the grounding for epistemic warrant. A rigorous analysis reveals that non-experiential ways of viewing apriority, such as innateness, establish the domain for a plausible naturalistic theory of a priori warrant. A moderate version of naturalistic epistemology that embraces the non-experiential feature of apriority and motivates future cognitive scientific research is the preferred account.

INDEX WORDS: Naturalized epistemology, apriority, belief-forming processes, non-experientiality, innateness, a priori warrant, moderate naturalism, reliabilism, cognitive science.

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DEDICATION

This paper is dedicated to my late grandmother, Lydia R. Christiansen, for always believing I could do anything I set my mind to. This paper is also dedicated to my late grandfather, Jesse A. Christiansen, for setting a fine precedence in our family toward higher education.

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1. Introduction

Willard Quine's attempt to naturalize epistemology (1969) launched an epistemic debate that survives to this day. The epistemic feud divides disciplines that should be working harmoniously to solve the problems of modern epistemology. An investigation into justification should not be couched as either exclusively analytic or empirical.

Recently, many naturalists have sought a middle ground in the debate. The result is versions of naturalized epistemology that allow for elements of justification that are not just empirical. Such versions are commonly referred to (e.g., Alvin Goldman 1999) as forms of *moderate naturalism*. There are many types of moderate naturalism. These moderate accounts locate the epistemic rivalry between philosophy and science within the following question: should apriority be allowed in a naturalized story? In this paper I will frame the debate within this moderate tradition. I will be presupposing primarily a traditional definition of empiricism. The traditional definition of empiricism asserts that all knowledge is based on or derived from experience. The term science will be broadly construed to mean inquiry and method derived solely from empirical means.

Allowing apriority in naturalized epistemology encompasses many issues. For example, how do we accurately define and explain apriority? What should a program of *moderate naturalism* look like and why should we adopt it?

This paper has three main parts. The first part outlines popular versions of naturalized epistemology. The second part provides an analysis of apriority. In the last part I argue for a place for apriority in naturalized epistemology.

2. Naturalized Epistemology Defined

Many types of naturalized epistemology contain arguments that constrain the domain of knowledge to empirical investigation. One empirical interpretation of Quine's naturalized epistemology is provided by Antony (2004):

> The stimulation of his sensory receptors is all the evidence anybody has to go on, ultimately, in arriving at his picture of the world. Why not see how this construction proceeds? Why not settle for psychology? (Antony 2004, pg. 3-4)

Since on this view scientific practice is rooted in the empirical investigation of the world around us and empirical (sensory) evidence is all we have to justify knowledge, Quine made the move to *naturalize* epistemology.[1] However, I contend that such a view assumes that justification can only be based on empirical evidence. Although it may be conceded that epistemology could use help from science (e.g., the cognitive sciences), it remains debatable whether or not the practice of epistemology should be entirely relinquished to science and justification treated merely empirically.

Alvin Goldman, in his article "A Priori Warrant and Naturalistic Epistemology" (1999), outlines three versions of naturalized epistemology. Goldman's first version, *scientistic naturalism,* is perhaps the truest descendent of Quine's naturalized epistemology. Scientistic naturalism categorizes epistemology as a branch of science:[2]

> (SN) Epistemology is a branch of science. The statements of epistemology are a subset of the statements of science, and the proper method of doing epistemology is the empirical method of science. (Goldman 1999, pg. 2)

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[1] I will be presupposing Antony's broad interpretation of Quine's naturalized epistemology. There are alternative interpretations. However, my purpose here is simply to loosely define and frame the debate, not to argue which is the best interpretation of Quine's naturalized epistemology.

[2] A contemporary naturalist, Penelope Maddy, in her article "Naturalism and the A Priori" (2000), defends a view, which she refers to as *Empirical Realism Neat.* Maddy's version of naturalism contains important analogues to Goldman's scientistic naturalism. However, her view of apriority is not developed enough to treat her article in depth.

Notice that although scientistic naturalism makes no mention of justification, it still implies certain statements about epistemology.

The second version of naturalized epistemology Goldman outlines is *empiricist naturalism*. Empiricist naturalism treats justification as arising purely empirically:

> (EN) All justification arises from empirical methods. The task of epistemology is to articulate and defend these methods in further detail. (Goldman 1999, pg. 3)

The chief advantage of empiricist naturalism is its explicit discussion of justification. As Goldman's explanation of it makes clear, scientistic naturalism makes epistemology a branch of science, but it does not refer to or explicitly discuss justification. A common epistemic criticism of Quine's naturalized epistemology is its lack of explicit discussion of justification. The same applies to other programs of scientistic naturalism (e.g., Maddy 2000). Keeping justification in focus is advantageous because settling questions of what warrants a claim of knowledge is one of the key elements that distinguishes epistemology from the sciences. Without it I believe the goal of naturalizing *epistemology* becomes unclear.

Goldman's defends a third version of naturalized epistemology, which he refers to as *moderate naturalism* (MN):

> (MN) (A) All epistemic warrant or justification is a function of the psychological (perhaps computational) processes that produce or preserve belief.
> (B) The epistemological enterprise needs appropriate help from science, especially the science of the mind. (Goldman 1999, pg. 3)

(A) is the more crucial of Goldman's two descriptions above. Unlike scientistic naturalism, (A) mentions epistemic warrant.[3] Furthermore, (A) views epistemic warrant

[3] I will use the terms "warrant" and "justification" interchangeably.

as present, either as psychological processes or what Goldman refers to specifically in his account as *belief-forming processes.* For Goldman, belief-forming processes can be a source of warrant.[4] This is the main feature that distinguishes his moderate naturalism from empiricist naturalism. Goldman's moderate naturalism treats justification as allowing for sources of warrant that are not derived purely empirically:

> The most salient feature of (MN) for present purposes is that it makes no commitment to any thoroughgoing form of empiricism. It leaves it entirely open that rational insight or rational apprehension might be among the sources of epistemic warrant. In particular, since rational insight or apprehension might be a variety of belief-generating causal process, the door is not closed to rationalistic warrant. (Goldman 1999, pg. 4)

A version of naturalized epistemology analogous to Goldman's moderate naturalism is Antony's naturalism (2004):

> The existence of knowledge is the starting point, the explanandum, of a scientific approach to epistemology. The question of *warrant* becomes the question of what processes and procedures do, as a matter of empirical fact, enable us to gather and process information about ourselves, each other, and our external environment. If a (mental) process works, it works—there is only the question of understanding *how* it works. (Antony 2004, pg. 4)

Notice that Antony's account also makes specific reference to warrant. As with Goldman's moderate naturalism, her discussion of warrant includes psychological processes, which are integral to her account. Also, like Goldman's account, Antony's naturalized epistemology refers to the need for scientific investigation to help explain belief-forming processes.

Phillip Kitcher (2000) offers a version of moderate naturalism that, like Goldman and Antony's accounts, makes specific reference to warrant. Furthermore, he treats warrants for beliefs as relying on causal processes that produce those states. "If a state is

[4] By *source of warrant* I mean one way an agent's belief can be warranted.

produced by the right kind of causal process," then, "the process is a warrant for the belief" (Kitcher 2000, pg. 66). Kitcher specifically refers to such a process as the *psychologistic approach*.[5]

I have looked at multiple accounts of naturalized epistemology, ranging from the more scientific to the more moderate. I think there is a key point that should lead us to reject versions of naturalized epistemology that are scientistic and empiricist. In short, scientistic and empiricist discussions of warrant are inadequate because they do not allow for non-empirical sources of justification. I believe a view that allows for non-empirical warrant is necessary in order to adopt the psychologistic approach because the psychologistic approach includes belief-forming processes that do not necessarily fall under the rubric of empirical investigation.

Scientistic naturalism makes no reference to justification at all. Therefore, scientistic naturalism holds no explicit view of justification. The scientistic naturalist's implicit response is that no such reference is required because epistemic statements are simply a subset of the statements of science. However, this only shifts the attention away from the problem. If the scientistic naturalist is making a claim about epistemic statements, then such a claim implies questions about her *warrant* for such statements. To make no reference or claims regarding warrant is to avoid or neglect such questions.

Empiricist naturalism allows for only empirical discussion of warrant. To avoid begging the question against the moderate naturalist, I believe the burden of proof is on the empiricist naturalist to show that non-empirical sources of warrant are implausible.[6]

---

[5] I will presuppose both *psychological processes* and the *psychologistic approach* to mean mental processes that can provide certain sources of warrant.

[6] My goal here is not to debate the rich tradition of empiricism. I am simply pointing out that empiricism leaves no room for non-empirical sources of warrant and that this is an important problem for empiricists.

Empirical evidence can provide a source of warrant for a belief. However, there are many beliefs that include a source of warrant that do not depend solely on empirical means.[7]

Consider the following passage by Christopher Peacocke:

> When you come to know a logical truth by way of your having a proof of it, you may need to perceive the inscription of the proof, and you may need various perceptual capacities to appreciate that it is a proof. But the justification for your belief in the logical truth is the proof itself. Perceptual experience gives access to the proof, which provides an experience-independent justification for accepting its conclusion. (Peacocke 2000, pg. 255)

Peacocke argues for an experience-independent source of justification. Simply perceiving an "inscription of a proof" (Peacocke 2000, pg. 255) only gives me empirical justification that it is a proof. However, to "know a logical truth" (Peacocke 2000, pg. 255) requires rational apprehension of the proof itself, which gives me non-empirical justification.

Suppose my proof for a particular logical truth is a truth-table. I justify my recognition of the truth-table and its content by my perceptual experience of it. For example, I may learn to draw the proper lines of a truth-table. I may also repeat the procedure for truth-tables over and over again until I come to recognize them automatically. However, based merely on this perceptual experience, could I really be said to come to *know* that a particular truth-table proves a certain logical truth? As Peacocke argues, it is the proof itself, independent of my perceptual experience that provides me with justification for the logical truth. In other words, my justification involves rational capacities as well as perceptual capacities.

The naturalized epistemology I find most plausible is Goldman's moderate naturalism. Like Antony and Kitcher, Goldman provides an adequate discussion of

[7] This discussion traditionally involves the controversial distinction between rationalism and empiricism. Such a discussion would take us too far afield. My goal here is only to point out that empiricist naturalism does not allow for rationalistic sources of warrant such as the psychologistic approach.

warrant. However, I prefer Goldman's reference to warrant as belief-forming processes. The term *belief-forming process* gives us more insight into a part of the process of some sources of justification. A belief can be *formed* through a special process that could therefore provide a source of warrant. That a source of warrant is *psychological* or a *causal process* does not paint as clear a picture as a belief-forming process. Certain psychological processes may have nothing to do with warrant since they do not lead to the formation of a belief. For example, my sub-conscious mind could be argued to cause unexpected behaviors. However, I would typically not consider my sub-conscious mind to be part of a process that directly forms a belief and therefore a process that could provide a source of warrant for that belief.

Also, though implied in Antony's work, Goldman directly makes the point that epistemology needs help from science. Help from science is necessary because the belief-forming processes that can provide sources of warrant require scientific investigation and explanation.

3. Analysis of Apriority

A clear, cogent analysis of apriority is a daunting task. My goal is this section is to analyze features of a priority in the context of a priori *warrant*. However, it could be argued that there are two views of apriority that are required for a complete and plausible account: a priori warrant *and* a priori knowledge. In our analysis of apriority, our interest will be best served by treating apriority as a form of warrant and not knowledge (or truth). Goldman puts it quite well:

> I shall follow the practice of recent discussions that treat the a priori as a species of *warrant* or *justification.* This has several advantages. First, it properly allows for the possibility that a belief might have a priori warrant

> but fail to be true, and hence fail to be a piece of knowledge. Second, it sidesteps, or at least marginalizes, the question of what else is required for knowledge beyond justified true belief. Third, it highlights the fact that unlike the necessary/contingent distinction, which is a distinction between types of truth, the a priori/a posteriori distinction is fundamentally concerned with sources of warrant or justification, not types of (true) propositions. (Goldman 1999, pg. 1-2)

Although it is important, as Goldman points out later in his article, that a theory of a priori warrant be *upgradable* to a theory of a priori knowledge, it will not be required or directly relevant for me to argue for a priori *knowledge* here.[8]

I believe the most important point in Goldman's passage above is that the epistemic spirit of the a priori is *justificatory* and not *predicating*. Whether a belief is true or false has to do with its content. However, whether a belief is a priori or a posteriori has to do with its *source of warrant.* This is a crucial distinction I would like to clarify.

There is an important difference between the content of a belief, believing a statement to be true, being warranted in believing a statement to be true, and possessing a priori warrant for a statement. First, only a belief can be warranted, not its content. Second, just because I believe a statement *p* to be true, this does not mean *p* is true. After all, *p* may be false. Third, even if I believe I am warranted in believing *p*, I may not be warranted. And fourth, even if I am warranted in believing *p*, it does not follow that I necessarily have *a priori warrant* for believing *p*.

Goldman (1999) structures his analysis of apriority by listing and then treating various traditional *features* of the a priori. I find this structure useful and I will use the same approach. However, I shall be adding additional features and points based on other contemporary philosophers' analyses of apriority (including my own). Overall, I will be

[8] My focus is on theories of a priori warrant that allow for apriority in naturalized epistemology. A theory of a priori knowledge would require an in-depth discussion of Gettier-type problems, which would take us too far afield.

contrasting Goldman and Antony's views of apriority against Kitcher's views. The seven traditional features of apriority I will be analyzing are *non-experientiality, necessity, infallibility, certainty, unrevisability, eternal (abstract) objects, and bivalence.*

3.1 Non-Experientiality

Non-experientiality is arguably the most prominent and traditional feature of apriority. That a priori justification be *independent of experience* is the characterization most commonly associated with apriority. I will consider the following statement, which I will call (NE) for non-experientiality:

> (NE) I have a priori warrant for believing *p* if and only if the source of my warrant for *p* is independent of experience.

What is exactly meant by *independent of experience*? One important way to view experience-independence is identified by Goldman (1999) as *non-perceptual*. Goldman refers to this view as "a negative characterization of the a priori: a warrant is a priori if it is *not* perceptual" or as "the *absence* of an experiential or perceptual basis of belief" (Goldman 1999, pg. 8). This would give the following definition of non-experientiality:

> (NE1) I have a priori warrant for believing *p* if and only if the source of my warrant for *p* is non-perceptual.

But is this really an accurate characterization of the non-experiential feature of apriority? According to Goldman, it is wrong to "equate a priori warrant with non-perceptual warrant" (Goldman 199, pg. 8). Goldman argues that there are types of warrant that are neither perceptual nor a priori. He cites, for example, *introspection*:

> (I)ntrospection can give rise to warrant, but its type of warrant is neither perceptual nor a priori. Introspection should not be regarded as a species of perception, especially for present purposes, because it has no distinctive type of sensory experience associated with it. Of course, many objects of introspection—e.g. pains, itches, and tickles—have sensory qualities, but introspection per se does not. One can introspect thoughts without any

> accompanying sensory quality. So one cannot equate a priori warrant with non-perceptual warrant. (Goldman 1999, pg. 8-9)

In other words, I can have non-perceptual warrant for a belief and still not have a priori warrant. Thus NE1 fails.

Another way of viewing non-experientiality is *partial non-experientiality.* This view asserts that one's warrant for a belief can be first a posteriori and later a priori. Goldman describes it quite nicely:

> This proposal is not meant to imply that whenever an agent uses a process that is an a priori warrantor, any belief-output of the process is *wholly* a priori. On the contrary, if one starts with a set of believed premises that originate in perception and then applies an inferential a priori warrantor to that set of beliefs, the resulting conclusion belief does not have *pure* a priori warrant. Nonetheless it seems instructive to say that such a conclusion belief has an *element* or *component* of a priori warrant, simply because there is one strand of its warrant that is a priori. (Goldman 1999, pg. 12)

This definition of non-experiential apriority would give us the following:

> (NE2) I have a priori warrant for believing *p* if and only if the source of my warrant for *p* originates in perceptual experience but is later warranted independent of experience.

To further clarify NE2, let's take the example of 2+2=4. My original source of warrant could be perceptual. For example, I could perceive two groups of two objects lying next to each other. My source of warrant for the particular appearance of these objects would be perceptual. However, to later arrive at the conclusion that 2+2=4 I would need to make inferences involving the + sign and the = sign. Such inferences would involve a rational capacity that would provide a source of warrant independent of experience.

Kitcher (2000) argues that his theory of warrant is a version of NE2. His analysis is provided below:

> [A statement] is an a priori warrant for X's belief that p just in case [a statement] is a process such that for any sequence of experiences sufficiently rich for X for p
>
> (a) some process of the same type could produce in X a belief that p
> (b) if a process of the same type were to produce in X a belief that p, then it would warrant X in believing that p
> (c) if a process of the same type were to produce in X a belief that p, then p. (Kitcher 2000, pg. 67)

Kitcher's analysis is unusual and difficult to understand. However, there are three main points that I think will help clarify his view.

First, Kitcher's sequences of experiences and resulting belief-producing processes[9] originate in the experiential world *outside the agent*. This is a key distinction between Kitcher's account and Goldman and Antony's account. For Goldman and Antony, belief-forming processes are internal to the agent and independent of experience. For Kitcher, external belief-producing processes produce a belief in the agent.

Second, a sequence of experiences *need not overlap* with any other sequence of experiences, as long as the process that produces the belief in me is *some process of the same type*. For example, I could believe *p*, an agent in China could believe *p*, and our sufficiently rich sequences of experiences need not depend on each other whatsoever, as long as our belief-producing process is of the same type.

Third, beliefs may be warranted *whether or not* they rely on any specific sensory input. Kitcher includes the following example:

> The knowledge[10] of contemporary mathematicians may be proximally produced by their reflections of what they have absorbed from the past, reflections that do not depend on any specific sensory input, but are

[9] I will use belief-*producing* process in order to distinguish it from Goldman and Antony's belief-*forming* process. I believe this highlights a key difference between their views. For Kitcher a process outside an agent *produces* a belief in the agent. On Goldman and Antony's view the agent *forms* the belief herself.
[10] Notice Kitcher's use of the word knowledge here is separate from warrant or a priori warrant. In this passage, it is the reflections of the mathematicians that may lead to warrant or a priori warrant.

> ultimately dependent on the collective experiences of the tradition in which they stand. (Kitcher 2000, pg. 90)

Kitcher refers to the above case as his *tradition dependence* view. Any sequence of experiences can include the collective experience of others. A belief that depends on the collective experiences of others would not be based on any direct sensory input. Hence, beliefs can be based on direct or indirect sensory input, as long as the sequence of experiences is sufficiently rich to produce that belief.

What is exactly a priori on Kitcher's account? Whether a belief depends on direct or indirect sensory input, it would still not be non-experientially-based because such a belief would be ultimately rooted in experience.[11] Hence, the component of Kitcher's analysis that allows for a priori warrant must have to do with his idea of *any* sequence of experiences.

Let us apply the example of 2+2=4 again. According to NE2, there is an a posteriori warrantor and then an a priori warrantor. Let any sequence of experiences sufficiently rich to result in the belief-producing process that provides a posteriori warrant be *two groups of two objects lying next to each other*. What would be the sequence of experiences sufficiently rich to result in the belief-producing process that provides a priori warrant? To become an a priori warrantor, the sequence would have to be independent of experience. This is where Kitcher's account runs into trouble. It is difficult to see how any sequence of *experiences* could produce the belief in me that the + sign and the = sign lead me to the conclusion that 2+2=4. How could I be said to *experience* the + sign and the = sign?

[11] Another possible interpretation of Kitcher's theory is that beliefs not relying on direct sensory input could be non-perceptually a priori warranted (NE1). However, we rejected NE1 because non-perceptual warrant and a priori warrant are not necessarily the same thing.

Could the fact that Kitcher's sequences of experiences need not overlap with any other sequence somehow allow for a priori warrant? There are two problems with this possibility. First, even a non-overlapping sequence of experiences would still be rooted in experience. Second, on Kitcher's view, a non-overlapping sequence of experiences would have to be based on some belief-producing process of the same type. This type-relation between the two belief-producing processes would itself be an experience-rooted overlap.

Kitcher could object that I do not need to make experience-independent inferences involving the + sign and the = sign to be fully justified in believing that 2+2=4. After all, there is the rich tradition of mathematics. Since the sequence of experiences leading to warrant for my belief need not rely on any direct sensory input, I could simply accept the wisdom of centuries of mathematicians. The problem is that the external process of relying on collective experience would not yield *a priori warrant*. Furthermore, such an approach would be unreliable when dealing with beliefs other than logical or mathematical truths. For instance, long ago most people believed the earth to be flat. If it were not for individuals like Christopher Columbus who *reasoned for himself* that this view could be wrong, we might still believe a grievous error.

Goldman and Antony's accounts differ from Kitcher's account in that they view belief-forming processes as providing sources of non-experiential warrant. However, their accounts do not rule out a posteriori sources of warrant for beliefs or beliefs whose warrants originate in perception and are later a priori warranted. Hence, their views allow for both non-experiential and partially non-experiential apriority and would be represented as follows:

> (NE3) I have a priori warrant for believing *p* if and only if the source of my warrant for *p* is based on belief-forming processes that do not require perception.

I believe this is the most plausible view. First, it allows for partially non-experiential apriority. This allows us to flexibly but cogently preserve the most traditional feature of apriority. Secondly, by shedding the non-perception constraint, NE3 opens the door to *wholly* non-experiential apriority, which brings us to the next sub-section.

3.2 Innateness

Another way that apriority can be non-experiential is via *innateness*. A formulation is provided below. I will use (I) to refer to innateness.

> (I) I have a priori warrant for believing *p* if and only if the source of my warrant for *p* is innate.

One way a source of warrant can be innate is through *belief-forming processes*. For Goldman and Antony belief-forming processes are part of one's *cognitive architecture* (Goldman 1999 and Antony 2004). Antony refers to some belief-forming processes as part of one's "cognitive machinery" which, to alter, "one presumably would need surgery" (Antony 2004, pg. 9). The central idea here is that these innate belief-forming processes[12] are *hard-wired* into us from birth and are in a general sense extremely difficult to change.[13] Such processes are *wholly* non-experiential. There is no way one can experience her own belief-forming process.

[12] Like Goldman and Antony, my goal here is to argue for innate belief forming processes as non-experiential sources of a priori *warrant*. That such sources of warrant also provide scientific evidence that may warrant psychological hypotheses is not directly relevant to my discussion here.

[13] I am not arguing that an agent's cognitive machinery would not be radically changed if she suffered a serious head injury, for example. That would be counterintuitive. I am simply arguing that in the ordinary life of an individual cognitive machinery is relatively permanent.

There are multiple examples of innate belief-forming processes. Goldman's list includes: "perceptual processes in the several sense modalities, remembering, introspecting, and (many forms of) reasoning or calculating" (Goldman 1999, pg. 11). Reasoning and calculating involve what Kitcher (2000) refers to as *propositional* and *conceptual preconditions of experience*.

Preconditions of experience, broadly construed,[14] are conditions that are present before an agent can have a particular experience. For instance, we have been using the example of 2+2=4. It could be argued that there is an innate conceptual precondition that allows us to cognize numerical concepts.

In the case of propositional preconditions the precondition would take the guise of an *innate capacity* to perform a particular cognitive task. In the case of a conceptual precondition the precondition would be some relevant *innate concept* that allows the agent to have a particular experience. What is argued to be non-experiential here and thus a priori is the fact that such preconditions occur *before* a particular experience.

Both Goldman and Antony invoke examples of each to illustrate innate belief-forming processes. Antony refers to a simple case of *modus ponens* (a propositional precondition) as demonstrative of "the structure of a reliable cognitive machine: the hypothesized syntactic engine inside my head" (Antony 2004, pg. 6). She also uses the example of universal grammar (a conceptual precondition) as evidence of innateness "in the form of explicit rules (linguistic concepts) represented and stored from birth (or close thereto)" (Antony pg. 2004, pg. 7).

[14] My purpose here is simply to provide a working definition that allows us to view preconditions as *non-experiential*. Surely a more precise definition can be formulated within a conceptual analytic framework.

Goldman cites examples in the contemporary cognitive scientific literature that illustrate the possibility of innateness by way of propositional and conceptual preconditions. For example, Goldman looks at deductive logic (a set of propositional preconditions), pointing out that many modern theories suggest, "that ordinary people have something like natural-deduction systems built into their heads, quite possibly innately" (Goldman 1999, pg. 17). Goldman also refers to the innate concept of *numerosity* (a conceptual precondition) and studies that support this possibility. For example, certain studies have produced evidence of a psychological capacity for *numerical cognition* even in human infants. "Using the standard technique of gauging surprise by length of looking time, Wynn (1992) found that five-month-old infants can correctly detect elementary arithmetic relationships, such as 1+1=2 and 2-1=1" (Goldman 1999, pg. 16).

However, even if we concede the presence of innateness in such belief-forming processes, how does this innateness give us a priori warrant? An argument is needed to go from one step to the next or we could be in danger of conflating innateness with a priori warrant in which case (I) would fail.

One way that both Goldman and Antony argue for innateness providing a priori warrant is by offering distinctions that explain the difference between belief-forming processes that result in a priori warrant and those that do not. Goldman distinguishes between belief-forming *processes* and *methods*.

> By a "process" I mean something that is part of a person's fundamental cognitive architecture. By a "method" I mean something that is not part of one's fundamental cognitive architecture, but something learned, typically by cultural transmission. (Goldman 1999, pg. 14)

Goldman uses the example of a truth-table procedure in logic to further demonstrate.

> In one case Harry learns the truth-table method from Ellen, who simply explains how to use it without explaining why it is (necessarily) reliable. Harry simply accepts its reliability from Ellen on trust; he does not use his prior reasoning powers to "see" that it is reliable. In a second case Harry learns the truth-table method from Ellen, who explains why the method is (necessarily) reliable, an explanation that Harry fully comprehends and appreciates in virtue of his pure reasoning powers. In the first case it seems clear that the truth-table method of forming beliefs about tautologies is not an a priori warrantor. For one thing, the method is acquired in part by perception (of Ellen's testimony), and that perception is not an incidental or eliminable feature of Harry's acceptance of the method. In the second case Harry seems to have a priori warrant for his belief that the method is (necessarily) reliable, because he himself determines its reliability by pure reasoning powers. (Goldman 1999, pg. 14)

Antony differentiates between *possessing* and *explaining* warrant. The former yields a priori warrant and the latter does not. For example, when Harry above uses his own belief-forming process he possesses a priori warrant. When he simply accepts Ellen's explanation of how to use the truth-table but does not *see* for himself how to use the truth-table, he does not possess a priori warrant. Hence, belief-forming processes are determined to be a priori warrantors if they are innate processes that are possessed and employed by the agent forming the particular belief. If I accept a belief-forming process based on cultural transmission, according to Goldman, such would constitute a belief-forming *methodology* and not a belief-forming *process*. Kitcher's tradition-dependence view could provide one example of a belief-forming methodology. If I am basing my warrant for a belief on the collective experiences of others, I am simply standing on their shoulders and not forming the belief on my own.

Goldman and Antony's distinctions above are meant to address the problem of conflation between innateness and a priori warrant. What makes an innate source of

warrant a priori is that it is based on my own internal belief-forming processes. This now gives us the following statement:

> (I1) I have a priori warrant for believing *p* if and only if the source of my warrant for *p* is based on an innate belief-forming process.

However, there is a problem with I1. I may form a belief by my own reasoning process but my belief could still turn out to be wrong. In this case I would not have warrant for my belief after all, let alone a priori warrant. Thus I1 also fails.

Another way that Goldman and Antony argue for theory of a priori warrant is by adding a reliabilist[15] condition to their account. This would provide an answer to the above problem with I1. It takes more than just possessing and employing my own belief-forming process. An agent also has a priori warrant just in case her a priori warrantor *reliably* leads to true beliefs. We can now give a final formulation of the views of Goldman and Antony regarding innate apriority:

> (I2) I have a priori warrant for believing *p* if and only if the source of my warrant for *p* is based on an innate belief-forming process that leads reliably to true beliefs.

The objection could be raised that I2 is not sufficient for a priori warrant because a belief does not have to be based on a reliably true innate belief-forming process to be a priori warranted. For example, my belief that a triangle has three sides could be warranted perceptually and later be warranted a priori based merely on the *meaning* of a triangle. However, I do not see how such a belief could be *a priori warranted* without my rational

[15] Based on their accounts I will presuppose that Goldman, Kitcher, and Antony are all at least standard reliabilists. Since the focus of my paper here is a priori warrant and not reliabilism, I will not discuss reliabilism beyond the reliabilist condition used here by Goldman and Antony to answer this objection.

apprehension of the analytic justification of a triangle. Regardless, this is still an important problem for I2.[16]

Kitcher rejects innateness as a priori:

> (T)he relativization to lives sufficiently rich for p already allows for a priori knowledge that isn't innate. (C)onversely, even though one could know that p on the basis of *no* experience, it doesn't follow that one could know p on the basis of any sufficient rich experience…" (Kitcher 2000, pg. 69)

I believe there are two ways to interpret Kitcher's rejection of innateness as a priori. The first way is to interpret his rejection as a criticism of innate knowledge. The other way is to interpret his rejection as a criticism of innateness as a source of warrant. I believe the interpretation will depend on how we read "know that p" (Kitcher 2000, pg. 69).

If we interpret "know that p" (Kitcher 2000, pg. 69) as *to have innate knowledge of p*, then Kitcher's rejection of innateness as a priori fails. Innateness is a source that may provide a priori warrant for a belief. However, innateness itself does not lead to knowledge of a proposition.[17]

Furthermore, there are several problems with treating innateness as a source of knowledge instead of as a source of warrant. First of all, even if I could know something innately how would I know that I know it? Innateness is supposed to be non-experiential. Also, even if I could know something innately, why should I have to know that I know it in order to be justified that I know it?[18] Finally, even if I knew something innately it would not follow that I know it a priori.

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[16] I believe a proper answer to this objection would require a discussion of internalist versus externalist views of justification, which would take us too far afield.

[17] For example, a belief-forming process may be said to cause a belief. However, a belief-forming process itself could not tell us if a belief was true or false.

[18] Obviously a fair answer to this problem again involves a treatment of internalist versus externalist views of justification, which would take us too far afield (e.g., an externalist may not see this as a problem).

If we interpret "know that p" (Kitcher 2000, pg. 69) as *to have an innate source of warrant for p*, Kitcher's criticism also fails. The process that produces a belief in an agent on Kitcher's account depends on a sequence of experiences sufficiently rich to produce that belief. Any sequence of sufficiently rich experiences could never apply to an innate source of warrant because any sequence of experiences would always be warranted against experiences in the world. Innate sources of warrant are non-experiential.

Goldman and Antony argue that propositional and conceptual preconditions of experience are further examples of innate belief-forming processes[19] that can be a priori warrantors. Thus,

> (I3) I have a priori warrant for believing *p* if and only if the source of my warrant for *p* is a propositional or conceptual precondition of experience.

However, Kitcher rejects propositional preconditions of experience as a priori:

> If there are any propositions that we have to believe in order to have experience (knowledge), it's an entirely separate issue whether there are processes that would warrant them given any sufficiently rich experience. (Kitcher 2000, pg. 71)

Kitcher is correct to point out the difference between a propositional precondition of experience and any sequence of experiences against which it may or may not be warranted. However, Kitcher wants to make propositional preconditions a posteriori warrantors instead of a priori warrantors in order to reject them as a priori. On Goldman and Antony's accounts, propositional preconditions of experience are a priori warrantors just in case they are innate belief-forming processes that lead to reliably true beliefs. If any sequence of experiences fails to provide a process to warrant my propositional

[19] See examples cited above by Goldman 1999 (deductive logic and numerosity) and Antony 2004 (*modus ponens* and universal grammar).

precondition of experience, I would be said to lack a posteriori warrant, not a priori warrant. In this case my a priori warrant would be overridden.

Take a simple case of an agent applying *modus ponens*:

1. If I graduate, my family is proud of me.
2. I graduate.

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3. Therefore, my family is proud of me.

What makes the propositional precondition of experience in the above argument an a priori warrantor is not my belief in the logical validity of *modus ponens*. It is the *deductive machinery* inside my head that allowed me to perform the inference. My belief in the logical validity of *modus ponens* may or may not provide *warrant* against any sequence of experiences (e.g., I may graduate and my family will be ashamed). However, my deductive machinery that allowed me to form the deductive inference gives me *a priori warrant* as long as it leads to reliably true beliefs.

Kitcher also rejects conceptual preconditions of experience as a priori:

> (E)ven though we might have to deploy a concept in order to have experience (knowledge), it doesn't follow that our belief that that concept was apt for the description of experience would have to be warranted against the background of any sufficiently rich experience. (Kitcher 2000, pg. 71)

By *apt* for a description of experience Kitcher means *whether or not a concept is directly relevant to the background of experience for which it is a precondition*. Here we see the same issue that arose with Kitcher's rejection of propositional preconditions of experience. Kitcher is treating conceptual preconditions as a posteriori warrantors instead of a priori warrantors. Relevance and justifiability against a background of experience do not apply to a priori concepts.

Let's take the example of universal grammar. Suppose I was born with an innate concept that was directly relevant to recognizing basic principles of grammar. This innate concept allowed me to learn English as a child. Let *my parents teaching me my first words* be any sequence of experiences sufficiently rich for me to learn those words. If I were to listen properly and speak recognizable English words, then my innate concept of universal grammar would be warranted against my parent's teachings. However, what makes my innate concept of universal grammar itself an *a priori warrantor* is that it is a conceptual precondition of experience (an innate belief-forming process). Should my words continue to turn out to be correct than I have *reliably true* belief-forming process.

Although preconditions of experience require further scientific explanation, they provide additional ways to view a priori as innate and thus non-experiential. Although Kitcher raises important inconsistencies when treating innateness and preconditions of experience as types of knowledge or a posteriori sources of warrant, his arguments do not give us plausible reasons to reject innateness as providing *a priori warrant*. Hence, I find I2 the preferred view.

3.3 Necessity

The next feature of apriority, *necessity*, "is another firmly entrenched feature of apriority according to historical treatments" (Goldman 1999, pg. 5). Earlier I highlighted a distinction between the content of a belief, believing a statement to be true, being warranted in believing a statement to be true, and possessing a priori warrant for a statement.[20] This distinction will be especially helpful in the ensuing sections.

[20] See section 3.0, pg. 8, second to last paragraph.

Historical discussions, simply put, have readily asserted that a priori statements are necessarily true. In other words, it is impossible for a priori warranted statements to be false. Thus, I will consider the following statement:

> (N) I have a priori warrant for believing *p* if and only if *p* is a *necessary* truth.

One crucial problem with the above statement is Kripke's famous argument (1980) that one can have a priori warrant for contingent propositions. Goldman (1999) cites a Kripke example, "the standard meter stick is one meter long." I can have a priori warrant for the above statement based on pure logical inference. However, the statement is not necessary because the proposition regarding standard meter sticks *could* be false. Conversely, Kripke also famously point out that I can have a posteriori warrant for necessary propositions as well (e.g., water=H_20). Thus, N already fails in two ways because my warrant and the statement being warranted are not equivalent. In the former case I have a priori warrant. In the latter case I have a posteriori warrant. But in neither case does the apriority of my warrant guarantee the necessity of the statement itself. Furthermore, it could be argued that there are many necessary truths of which no one is aware of. Also, there may be necessary truths too complex for humans to prove. In either case, such necessary truths could hardly be said to be a priori warranted.[21]

There exist numerous other counterexamples rejecting a priori warranted statements as necessary. I shall not belabor them here. Also, both Antony and Kitcher reject N. Suffice it to say that a priori-warrant and necessity are not equivalent, which leads me as well to reject necessity as a feature of apriority.

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[21] I would like to thank Dr. Steve Jacobson at Georgia State University for adding these points while discussing my paper.

3.4 Infallibility

Closely tied to necessity is the *infallibility* feature of apriority. One way to understand the difference between necessity and infallibility is by distinguishing those statements that are *always* true from those statements that are *believed to be always true.*[22] N operates under the former interpretation. I will discuss the statement below under the latter interpretation, which I am calling (IF) for infallibility.

> (IF) I have a priori warrant for believing *p* if and only if, if I believe that *p*, then *p* is a statement that is infallible.

Goldman also rejects infallibility as a plausible feature of apriority. According to Goldman, "there are many historical and everyday cases that comprise counterexamples to infallibility—cases in which people had sufficient a priori warrant for beliefs that have subsequently been recognized as false" (Goldman 1999, pg. 5). Goldman cites the famous example of Euclidean geometry. There are many such cases (e.g., Frege's axioms).[23] The important point here is that "(w)hen adequate care is taken in such matters, a reasoner's belief is presumably sufficiently justified on a priori grounds, but this still does not preclude all mistakes" (Goldman 1999, pg. 5). Hence, just because I have a priori warrant for a statement, this does not guarantee that my statement will not turn out to be false.

3.5 Certainty

Another common feature of apriority is *certainty*. A statement to consider would be simply this:

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[22] Obviously a discussion of metaphysical necessity versus epistemic necessity is involved here. I am intentionally avoiding *possible worlds* talk since my focus in this paper is epistemic, not metaphysical.
[23] Maddy (2000) also cites counterexamples against infallibility, such as Kant's transcendentalism being antiquated by modern physics and quantum physics threatening to eclipse universal causation.

> (C) I have a priori warrant for believing *p* if and only if *p* is a statement that is *certain.*

However, if we reject infallibility as feature of apriority, then we can almost immediately reject certainty. If a priori warrant is fallible, how could it possibly be certain? Or, as Goldman writes, "(r)outine beliefs about mathematics and logic are presumably justified a priori. But if they are fallible, as conceded earlier, can they really be certain?" (Goldman 1999, pg. 6). Thus C fails.

Furthermore, certainty can be interpreted in different ways. The interpretation being used can drastically change the playing field. For example, "*self-evident"* and "*beyond a doubt"* yield radically different possible interpretations. Self-evident implies that my belief in a particular statement does not depend on any other beliefs for its truth. Beyond a doubt suggests that I have an extremely high form of justified true belief. However, C fails under both interpretations. I can have a priori warrant for statements that are not self-evident. Or, I can have a priori warrant for statements that I believe beyond a doubt but that still turn out to be false.

Another complication Goldman raises is that if empirical beliefs are not certain and a priori warrants are contended to be certain, then a priori warrants would have to be at a level above perception. However, such standards set the bar impossibly high for a priori warrants. "Must they all be better justified than any perceptual belief whatsoever, including the belief that there is a telephone on the table before me? That is counterintuitive" (Goldman 1999, pg. 6). Antony and Kitcher also reject certainty as a feature of apriority and I will do the same.

3.6 Unrevisability

Perhaps the most central feature of apriority, other than non-experientiality, is *unrevisability*. Thus,

> (UR) I have a priori warrant for believing *p* if and only if *p* is a statement that is immune to revision in light of future experience.

Quine's (1963) notorious idea that no statement is immune from revision in light of future experience provides us with one working empirical interpretation of unrevisability. Antony (2004) reconstructed the Quine-Duhem thesis (1953) in argument form. This reconstruction will prove helpful in our analysis.[24]

> (1) No statement is immune from revision in light of experience. (Quine-Duhem thesis)
> (2) For a statement to be known a priori, it must be knowable independently of experience.
> (3) For a statement to be knowable independently of experience, it must be immune from revision in light of experience.
> (4) No statement can be known a priori. (Antony 2004, pg. 9)

Premise three is the crux of the argument. However, if we reject the first two premises, then we should reject premise three. Interestingly enough, if we presuppose *partially non-experiential* apriority, then we may be able to reject premise two. But we must be careful what *type* of experience we are referring to. Antony's reconstructed argument above presupposes Quinean perception, which limits all evidence we have to go on to the stimulation of our sensory receptors. Based on Quinean perception, we would interpret premise two as claiming that priori statements are knowable *independently of the senses*. We have already agreed that non-perception is not necessarily equated with apriority and also that one can begin with sensory data and then later form an a priori warrant. Hence, premise two fails.

[24] My purpose is not to treat Quine's epistemology. I am treating Antony's interpretation of the Quine-Duhem thesis here because of its content and direct historical relevance.

Premise one is not so easy to dismiss, but Antony (2004) attempts to do so. Though she does not develop the objection thoroughly, she draws a distinction between a *statement* and a *proposition*. A statement is just an epistemic state (e.g., a thought-tokening) whereas a proposition is something that can be rendered true or false. Whether we regard a statement or a proposition as the candidate for future revisability would dictate whether premise one is true or false. A statement that is *not* considered a candidate for future revisability could end up being unrevisable, rendering premise one false.

> If it is the *statement* 'I am here now,' then premise (1), the Quine-Duhem Thesis, is simply false. On the other hand, the defender of the Q-D Thesis might insist that the content of an epistemic state should be regarded as a proposition, and that the proposition expressed by an utterance or thought-tokening of 'I am here now' is perfectly empirical, and susceptible to revision in light of experience. (Antony 2004, pg. 9)

Antony is the only moderate naturalist treated here whose account may allow for *some* statements, via her distinction described above, to be unrevisable.

We have seen that the Quine-Duhem Thesis fails. There are ways of rendering premise one and two false. However, does it follow that we must embrace unrevisability as a feature of apriority? Incorporating the arguments above against the Quine-Duhem Thesis, we can now offer another formulation of unrevisability:

> (UR1) I have a priori warrant for believing *p* if and only if *p* is a statement that is unrevisable given any type of experience.

Notice that UR1 does not allow for statements to be candidates for future revisability because *p* must be unrevisabale given *any* type of experience. For a statement to be a candidate for future revisability it would have to apply to at least some type of experience.

An initial objection to UR1 could be that it allows that it is impossible for all of the following to be true:

1. I have a priori warrant for *p*,
2. *p* is unrevisable, and
3. I know *p*.

It would seem odd to claim that I have a priori warrant for *p*, *p is unrevisable,* yet I do not know *p*. I believe a proper answer to this objection requires a discussion of justification *and* knowledge. Since UR1 only argues for a priori warrant, such a discussion would take us too far afield. However, UR1 claims that I have *a priori warrant* for *p*, not that *I know p*. It is certainly possible that I could have a priori warrant for an unrevisable belief without being committed to knowing it.

Goldman rejects the unrevisability feature of apriority. His argument may give us another reason to reject UR1. Goldman invokes the work of Albert Casullo (1988). Casullo distinguishes between a *strong* and a *weak* version of unrevisability. Both versions are shown to fail.

> The strong version says that if S is justified in believing that p a priori, then the statement that p is rationally unrevisable in light of *any* future evidence. The weak version says that if S is justified in believing p a priori, the statement p is rationally unrevisable in light of any future *experiential* evidence. (Goldman 1999 pg. 6)

Casullo gives cogent counterexamples for each version. Unrevisability is rejected under the strong version, because of the case that I *could* be duped by a *pseudo-proof.* For example, I may look at a proof for a valid argument and make the logical inference that the proof is valid. I would therefore have a priori warranted belief *now*. However, it is *possible* that I be given a pseudo-proof but not be able to detect any error in my reasoning. Had I not known I was given a pseudo-proof, I would still believe the proof

was valid. My belief that the pseudo-proof is valid is still revisable, even though I have a priori warrant for believing the proof to be valid.

Casullo's counterexample against the weak version involves defeating neurophysiological evidence. Taking the same type of example above, I could look at a proof I have carefully considered and deem it via logical inference to be valid. However, if I were then shown a brain scan of my logical thinking, it might induce me to *doubt* my previous belief. My belief would be subject to empirical defeat and my a priori warrant therefore overridden.

I have so far treated two ways of defining empirical experience, the *Quinean perception* (experience as perception only), and the *traditional definition of empiricism*. I have defined traditional empiricism as the view that *all knowledge is based on or derived from experience.* RU1 uses a broad definition of experience. The broad definition of experience is the view that *all knowledge is based on or is ultimately derived from any type of experience*.

Notice that Casullo's strong and weak version counterexamples invoke different definitions of experience. The pseudo-proof counter example is based on the future statement that I was given a pseudo-proof. This future statement is required to defeat my belief and override my a priori warrant. However, I did not *seek out* the defeating statement. Hence, the statement is not part of my direct experience but is *ultimately* derived from experience (broad definition of experience). The brain scan example involves empirical defeat (traditional definition of empiricism) that is based on and derived from my direct experience with the brain scan. Thus there exists a subtle difference between experience that is *indirect* (ultimately derived from experience) in one

case and *direct* (derived from experience) in another. The pseudo-proof counter example does not rule out unrevisability under the traditional definition of empiricism.

This poses the question of whether or not both Casullo's strong and weak versions could allow for unrevisability under the broad definition of experience. The pseudo-proof and brain scan cases are both real defeaters that are *ultimately* derived from experience. So if we presuppose the broad definition of experience, then unrevisability fails.

Can we still salvage UR1? Notice that both Casullo's counterexamples treat the statement in question as a candidate for future revisability (e.g., whether or not the proof offered for it is valid). Even though UR1 does invoke a broad definition of experience, it rules out statements being candidates for future revisability. Hence, UR1 still stands.

Kitcher also rejects unrevisability. The core concept of his theory of a priori warrant, *tradition-dependence*, implies that a priori statements are subject to revisions imposed by future experience. In essence, Kitcher argues that our knowledge is passed down from generation to generation. With each new generation, knowledge evolves. He cites many examples from mathematics. We learn proofs, say, from our math teachers. Modern mathematicians introduce new proofs and periodically old proofs are shown to be in need of revision. His view of warrant allows an agent (given any sufficiently rich sequence of experiences) to pull from this cultural pool of knowledge without requiring any specific sensory input.

As part of his rejection of unrevisability, Kitcher offers one counter example involving a rival *logic* revisionist community:

> After the presentation of the powerful, or apparently powerful, rival system, the community splits. Most become converted to the new way of doing things, and they no longer believe the laws of our logic, but a small group of traditionalists persist in the old ways. Notice that they believe the

> laws, they endorse an evidential system that licenses the belief, and their system is a good one. Nonetheless, their beliefs are based on ignoring or misevaluating the apparent advantages of the revisionist way of doing things. Under the circumstances, we can't see them as anything other than blind dogmatists, and, in consequence, we shouldn't view their beliefs as warranted. (Kitcher 2000, pg. 88)

Kitcher's rival community case is a good one. First of all, it deals with a paradigmatic example of beliefs asserted to be a priori warranted. Logical laws can easily be argued as a priori warranted and unrevisable. However, that classical logical laws could require revision is somewhat more problematic.

Since Kitcher's counterexample presupposes the broad definition of experience, the survival of UR1 hinges upon whether we consider logical laws as candidates for future revisability. If logical laws fall under the broad definition of experience but are *not* candidates for future revisability, then UR1 may still be plausible. Perhaps a relevant passage from Antony regarding problems with the kind of rational revision endorsed by Quine can shed some light.

> If I feel under rational obligation to do anything, it is surely because of my commitment to logic; if I truly give up that commitment, how could I any longer feel rationally obliged to do anything? It would seem that giving up (for example) the Law of Contradiction would be tantamount to giving oneself license to believe anything at all. (Antony 2004, pg. 10)

Antony provides a cogent argument above for *not* treating at least some statements as candidates for future revisability. If we did not regard the core principles of logic to be unrevisable then our reasoning in general would collapse. Following this line of argument, logical laws could simply be viewed as reflections of the syntactic machinery inside our heads. Such machinery is innate, generally permanent, and thus unrevisable.

I contend UR1 still fails. The examples of non-candidates for future revisability cited by Antony above are epistemic states and logical laws. An example of an epistemic

state would be Descartes' *cogito*. An example of a logical law would be the Law of Contradiction. Both of these examples would supposedly fall under the broad definition of experience because "*unrevisable given any type of experience*" allows for statements such as non-candidates for future revisability. It seems instructive to say that such statements are at least in general *resistant* to revision. However, to claim that these types of statements are non-candidates for future revisability seems counterintuitive. An evil scientist who has my brain in a vat could dupe me into thinking I exist. Also, even if logical laws are reflections of innate mechanisms that are themselves unrevisable, this does not rule out that the way we explain such reflections will require revision as the cognitive sciences evolve. It seems the only way to allow that some statements are non-candidates for future revisability is to let the broad definition of experience include non-experientiality. Non-candidates for future revisability would then be non-experiential. However, this appears odd. How could revisability apply to non-experientiality?

3.7 Eternal (Abstract) Objects

Traditionally, apriority is taken to require a commitment to *eternal (abstract) objects*. Here I would like to follow in the footsteps of Goldman (1999) and avoid any in-depth treatment of this issue. In short, there is the distinct danger of conflating epistemological questions with metaphysical ones. For example, were we to assert that a priori warrant must involve a commitment to abstract objects, this would commit us to formulating a theory regarding the relevant domain for certain a priori statements, as well as the truth-makers for that domain. Furthermore, our focus has been on a priori warrant, which does not commit us to a theory of truth or knowledge.

3.8 Bivalence

The final feature of apriority I will treat is *bivalence*. Apriority is traditionally analyzed under the guise of the a priori/a posteriori distinction. A statement is either a priori or it is a posteriori. A statement of the bivalence feature of apriority would be the following:

> (BV) For all beliefs, if *p* is warranted, then *p* is warranted a priori or *p* is warranted a posteriori.

Interestingly, bivalence seems to trickle down into many (almost all) of the characterizations and arguments that I have treated in our analysis of apriority. For example, warrant is perceptual or non-perceptual, or experiential or non-experiential. Even to argue that a species of experience could be *neither* perceptual nor non-perceptual (e.g., introspection) is still merely *trivalent*. Yet it could be argued that to treat apriority bivalently or trivalently is to rob apriority of its rich, complicated personality. As Goldman keenly points out, "(a) significant number of people's beliefs have a warranting history that includes *both* perceptual and ratiocinative processes" (Goldman 1999, pg. 23). Let us revisit Goldman, Antony, and Kitcher's accounts from a *scalar* perspective. I will consider the following statement of the scalar feature of apriority:

> (SC) For all beliefs, if *p* is warranted, then *p* is warranted exclusively a priori or *p* is warranted exclusively a posteriori or both *p* is warranted a priori and a *p* is warranted a posteriori.

Both Goldman and Antony's views of a priori warrant are consistent with SC. A belief could be exclusively a priori warranted based on a wholly non-experiential innate belief-forming process (e.g., conceptual precondition). Also, Goldman and Antony's views do not rule out the possibility of exclusively a posteriori warranted beliefs (e.g., scientific hypotheses). Finally, NE2 allows for beliefs that are both a priori and a posteriori.

What about Kitcher's account? Since any sequence of experiences or resulting belief-producing processes would ultimately be rooted in experience, his view of warrant could not be considered exclusively a priori or a posteriori and a priori. Hence, Kitcher's view does not allow for a priori warrant according to SC either.

Finally, as Goldman (1999) argues at the end of his article, we can certainly apply the scalar view to theories of warrant overall. Instead of the tired dichotomy of empiricism versus rationalism, we "must certainly acknowledge the rational element in warrant, but this element must be assigned a suitably measured role, neither deflated nor inflated out of due proportion" (Goldman 1999, pg. 24).

We have looked at seven traditional features of apriority. I think the most plausible feature of apriority is non-experientiality. The non-experiential feature of apriority gives us fertile ground for grounding a priori warrant. The other features of apriority are too prone to cogent counter-attack. Furthermore, Kitcher's arguments against non-experientiality, including innateness and preconditions of experience, are not direct enough to rob non-experientiality of its plausibility. For reference, the *final* views for Goldman, Kitcher, and Antony are provided below:

> (Goldman and Antony) I have a priori warrant for belief *p* if and only if the source of my warrant for *p* is based on an innate belief-forming process that leads reliably to true beliefs.
>
> (Kitcher) I have warrant for belief *p* if and only if the source of my warrant for *p* is based on any sequence of experiences such that:
> (a) the sequence is sufficiently rich to warrant *p,*
> (b) the sequence does not depend on my specific sensory input,
> (c) the sequence leads to reliably true beliefs.

I think my final formulation of Goldman and Antony's views of a priori warrant above is the preferred account. It embraces non-experiential apriority via innate belief-forming

processes, which pave the way for future epistemological research. Kitcher's view was rejected as being even partially a priori because it failed to be a version of NE2 or SC.

4. Is There Room for Apriority in Naturalized Epistemology?

Good naturalists should not ignore as scientific evidence the occurrences of innate cognitive processes integral to the formation of beliefs. A naturalized epistemology that rejects or overlooks such processes would be implausible and incomplete. Innate belief-forming processes provide a priori warrant based on their non-experiential status. The place for apriority in naturalized epistemology thus lies here.

However, a general problem with innateness theory (including propositional and conceptual preconditions of experience) is that great investigative study into these mechanisms that confer a priori warrant is still needed. Presumably this is the work of the cognitive sciences. Once new data is revealed, it will be the work of epistemologists to establish new conditions for a priori warrant, giving us further insight into the intricate subject of justification. For example, we may learn that we have been improperly ascribing reliability to certain sources of warrant.

However, via non-experientiality, I believe what we do have is something important to hold onto from the rich tradition of apriority. The power of non-experientiality is its *transcendental force*—its generally unchanging quality that lends special reliability to certain belief-forming processes that produce epistemically distinct sources of warrant.[25] With future discoveries in cognitive science, the non-experiential aprioristic tradition may end up being more colorful than we ever imagined.

[25] I am taking some creative liberty here. However, the idea I have supported throughout my paper is that non-experientiality has a special, relatively permanent nature that gives non-experiential sources of warrant such as innate belief-forming processes certain distinguishability.

5. Conclusion

I have argued that the more plausible naturalized story is one that includes a non-empirical discussion of warrant. I have also analyzed various historical features of apriority. I concluded that the non-experiential feature (including partial non-experientiality and innateness) is the most plausible and therefore the best surviving feature of apriority. Finally, I have argued for a version of moderate naturalism that embraces non-experiential apriority and motivates future scientific research.

6. References

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