Critical Thinking, Philosophical Theories of Testimony, and the Challenge
of Wikipedia Knowledge Claims

by

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Abstract

Providing students with the necessary critical thinking skills to scrutinize knowledge claims is generally recognized as an important educational goal. Many critical thinking textbooks utilize a criteria-based practice of critical thinking whereby a number of criteria are set out for the evaluation of knowledge claims. These critical thinking criteria yield inconclusive results when applied to knowledge claims from Internet sources like Wikipedia. If criteria-based critical thinking practices are to be successfully applied to Wikipedia these criteria either need to be applied in different ways than what the textbooks suggest, or supplemented or replaced by different criteria. These textbooks do not provide a theoretical basis for the selection and application of these criteria, and it is asked if the philosophy of education provides a theory of critical thinking that can provide this guidance. The most well-developed account of critical thinking theory in the philosophy of education is Siegel's epistemology of critical thinking. Siegel's account provides theoretical grounding for the project of critical thinking itself, but this theoretical grounding does not provide guidance at the practical level of criteria development and selection. There is thus a gap in the literature of the philosophy of education between theoretical grounding for the critical thinking project itself and theoretical grounding for the criteria that are proposed in the context of this project. In order to fill this gap, attention is turned to the epistemological literature outside of the philosophy of education. The question of testimony, which involves the acceptance of a statement on the basis of another's say-so, has been a central issue in the recent philosophical literature on epistemology. This literature is examined to determine if and how philosophical theories of testimony can be applied to the identified gap in the philosophy of education literature. The result is the development of a testimony-based theory of critical thinking that provides theoretical grounding for the selection and application of critical thinking criteria that in turn address the acceptance of knowledge claims from sources such as Wikipedia.

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1. INTRODUCTION

Attempts to determine the fundamental goals and aims of education are contentious, and various goals have been proposed over the years. For example, Adler (2003) claims that "education, especially liberal education, aims at transmitting knowledge." He characterizes this claim as a "traditional view," and goes on to mention other contenders or co-contenders. However, he does claim that "the knowledge aim is a fundamental one" (p. 285). Although there will be no attempt here to defend this claim, it will be granted that knowledge plays a significant role in education. Even if knowledge transmission is not a fundamental aim or goal of education, a practical task of the education process is to expose students to new knowledge, and to provide guidance in this endeavor. This guidance includes providing students with the necessary skills to scrutinize knowledge claims and determine their worth.

Much of this knowledge is encountered through media of one sort or another. Until recently these encounters were mainly through print media—publications such as magazines, newspapers, or books that are printed on paper. These print materials and their production are sufficiently standardized that students[1] can be directed toward those that are credible and steered away from those that are not. An up to date encyclopedia in the library is considered credible; a tabloid available for sale by the supermarket checkout counter is not. Although most print media falls somewhere between these extremes, that material and the context in which it is encountered contain both implicit and explicit cues regarding the material's credibility. Individuals with some experience can quickly decipher those cues, and inexperienced individuals learn to recognize them. Other media such as radio and television are also part of the student experience, and offer similar cues that allow individuals to determine the credibility of the content they present. For example, that expressed as an opinion on a talk show is viewed differently if presented as fact on a national newscast, just as a scientist's speculation on the potential of a new discovery is viewed differently if reported in a popular magazine or in an academic journal.

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[1] For the purpose of this dissertation "students" will refer to students who are at a sufficiently advanced level that they can be treated as full-fledged if inexperienced critical thinkers (for example, students at the high school level) but who are not specialists in particular subject areas.

The Internet has upset this approach to credibility. The Internet includes a large repository of purported knowledge, and although it does contain credible material, its rapid growth and continually changing nature have precluded the mature development of the sort of cues that provide a reliable indication of credibility. An amateur's blog might look as professional as the CBC or *Nature* website, and determining the pedigree of the presented content is often difficult. Also, the affordances of the Internet provide alternative mechanisms for ascribing credibility. With traditional media credibility is expected to derive in some way from expertise and experts. In contrast, content on the Internet is often accredited by an uncredentialed community (e.g., Amazon's ranking system and reviews) rather than by attribution to credentialed experts. Additionally, the sheer mass and unstructured nature of the Internet can make it difficult to find credible content even if the credibility of that content, once found, can be ascertained. As a result, individuals who can reliably determine the credibility of material presented through more traditional media might encounter problems making this determination with Internet material.

Wikipedia is an Internet source that has proven widely successful both in growth and use. Although Wikipedia makes claims of credibility analogous to that of traditional paper-based based encyclopedias, it is, explicitly and unapologetically, a creature of the Internet. It has a consistent structure, and operates within a well-developed policy framework that accounts for malleability and other features characteristic of the Internet. As such, Wikipedia is an exemplar of Internet media. It is a product of the Internet rather than an Internet presentation of content from traditional media, yet makes authority claims similar to those held by its traditional media equivalents. Wikipedia distinguishes itself from other Internet genres (blogs, twitter feeds, etc.) by claiming to offer facts rather than opinion, and to be credible and self-correcting. It thus straddles the boundary between new and traditional media, purporting to be credible, yet lacking credentials in the traditional sense.

As such, Wikipedia's credibility is often questioned, and the uncertainty around socially accepted cues for recognizing and attributing credibility on the Internet carries through to individual Wikipedia articles and the knowledge claims they make. This makes evaluation of these articles and claims particularly difficult. A student evaluating a claim in Wikipedia will not

have recourse to the implicit and explicit cues regarding the material's credibility that are found in traditional media. What guidance should students considering these claims receive, and what grounding does this guidance require? Given the increased reliance of students on Wikipedia and other Internet sources, these issues of credibility are of paramount importance. Grounding for this guidance is particularly crucial when addressing claims of credibility on the Internet, as guidance that could be relied on when considering traditional media might fall short when applied to the these claims.

1.1 Problem Statement

Some of the material available on the Internet constitutes knowledge claims, and purports to be factual and comprise, in philosophical terminology, "true statements.[2]" Due to constraints of both time and ability, many of these knowledge claims are accepted at face value without further investigation. Is this acceptance, from a normative, epistemic perspective, proper? In other words, is this doxastically responsible behavior? This question might not have a single answer. Rather, the answer might depend on the particular knowledge claim, or type of knowledge claim, or the manner in which the knowledge claim is put forward. Although the issues covered in this thesis will range more broadly, the focus will be on Wikipedia. How should students evaluate statements put forth as knowledge claims in Wikipedia articles?

Although Wikipedia is a relatively new phenomenon, the general question of how to evaluate claims of fact is not, and critical thinking purports to give guidance for addressing exactly this sort of question. However, it will be argued that application of criteria in recent critical thinking textbooks to examples of these claims is inconclusive, suggesting that more guidance as to the application of these criteria, or perhaps different criteria, are required. Appeal will then be

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[2] In analytic philosophy the term "statement" is sometimes used in the sense of a declarative sentence that can be either true or false, and sometimes (as advocated by, for example, Strawson, 1950) as synonymous with "proposition," or the meaningful content of a sentence, whereby two different sentences could make the same statement. The first sense is the one generally used in this dissertation, and context will make clear when the second sense is being used.

made to the epistemic foundations of critical thinking as expressed in critical thinking theory with the hope that this theoretical context will provide guidance for the application and selection of criteria. In particular, Siegel's epistemology of critical thinking, the most well-developed of these theories, will be examined and found wanting. His theory leaves room for, and in fact calls out for, more exploration on the theoretical level.

Recent work in epistemology that focuses on testimony is potentially relevant to these theoretical questions, and what follows will explore this potential. In summary, this dissertation's statement of purpose is: *What theoretical grounding can the current epistemological literature on testimony provide for critical thinking criteria that are applicable to knowledge claims such as those found in Wikipedia?*

1.2 Dissertation Summary

Chapter 2 begins with an examination of two knowledge claims from Wikipedia. This examination illustrates the problem of applying critical thinking criteria to Wikipedia and motivates the subsequent discussion. This is followed by a discussion of critical thinking. The criteria put forward in critical thinking textbooks for evaluating sources are summarized and applied to the two Wikipedia examples. Problems with this evaluation are identified, and the need for foundational theory to guide the selection and application of the criteria is demonstrated. The epistemology of critical thinking is identified as a potential source for this foundational theory, and the theory put forward by Harvey Siegel is found particularly promising. However, a gap is identified between between Siegel's theoretical justification for the project of critical thinking and the specific criteria put forward in the textbooks for the practice of critical thinking. It is proposed that the epistemological theory of testimony has potential to bridge this gap and be further applicable to the foundations of critical thinking.

Chapter 3 turns to descriptions of Wikipedia put forward in the literature on Wikipedia as well as in Wikipedia itself, and identifies a number of features that characterize Wikipedia. Wikipedia as a whole, characterized by the features identified in this chapter, is evaluated

according to the criteria from the critical thinking textbooks. Problems resulting from that evaluation are identified.

Chapter 4 provides a review of the philosophical literature on testimony. Different accounts of testimony in that literature are summarized and various themes in that literature are identified. Although all of the ideas put forward by philosophers with respect to testimony might not be applicable to critical thinking, it is important to have an overview of those ideas in place before deciding which might be so applicable. Chapter 5 examines Wikipedia as an instance of testimony. Philosophical discussions of testimony commonly refer to a "standard case" involving a speaker and a hearer. Similarly, critical thinking criteria for source acceptance are usually phrased in terms of speaker and hearer. This chapter characterizes "Wikipedia testimony," compares it to the standard case, and sets out critical differences between the standard case and Wikipedia testimony. Chapter 6 examines Wikipedia testimony in the context of the various theories of testimony identified in Chapter 3, and identifies particular theories that are applicable to either Wikipedia in general or to specific instances of Wikipedia testimony.

Chapters 7 and 8 bring the theories of testimony and critical thinking together. Chapter 7 proposes additions to Siegel's epistemology of critical thinking based on the epistemology of testimony to bridge the gap identified in Chapter 2. Chapter 8 examines theoretical considerations that the epistemology of testimony does not cover. The result is a proposal for a more complete foundational theory for critical thinking. Chapter 9 returns to critical thinking criteria. The criteria identified in Chapter 2 are re-examined in the context of the proposed theory of critical thinking, and additional types of criteria are identified and explored. For purposes of illustration, the two examples initially put forward to motivate the discussion are re-examined in light of these criteria.

Chapter 10 summarizes the findings of the dissertation, examines implications for education and critical thinking, and presents directions for future research.

2. CRITICAL THINKING

Students in today's educational environment have access to vast amounts of material through the Internet that were unavailable a few years ago. Some of that material is set out as factual information[3] that is composed of true statements. However, the status of these knowledge claims is often hard to determine. For example:

1. A high school student writing a paper on Buddhism reads about the Dalai Lama consecrating a temple in the city of Itanagar, and wants to know where Itanagar is. According to Wikipedia, it is the capital of Arunachal Pradesh, a state in India ("Itanagar," n.d.). Google Maps, however, demarks Arunachal Pradesh with a dashed line, which, according to yet another Internet site, indicates that Google has determined the boundaries of the state to be in dispute—in this case, the dispute is with China (Hariharakumar, 2009). There is no indication in Wikipedia that the Arunachal Pradesh is disputed territory, yet Wikipedia has policies on and procedures for flagging and handling controversial issues (Fallis, 2008). Is Itanagar a city in India, or is it in China, or is there indeed a dispute regarding this territory?

2. A high school student writing a paper on autism reads a news story about the possibility of the measles vaccine contributing to autism. The Wikipedia article ("Vaccine controversy," n.d.) indicates that there is no connection between the vaccine and autism. However, she finds another Internet site that strongly suggests that there is a connection ("KNOW," n.d.). Is there a connection, or not, or is the matter still undetermined?

Both of these examples focus on the use of the Internet, and in particular on Wikipedia, an online encyclopedia that purports to be a credible source of information. On the other hand, other credible or at least credible-appearing sources on the Internet contain knowledge claims that contradict those in Wikipedia. Should the student accept the statements in Wikipedia? Alternatively, should she give credence to the other sources? Critical thinking provides an

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[3] The term "information" can be used in various ways. In his survey of information, Floridi (2010) characterizes "factual semantic information" as being "well-formed, meaningful, and veridical" (p. 50), and "information" is used in this sense in this dissertation. In other words, to put forward a statement as information is to put forward a knowledge claim.

account of how one should assess claims of fact, and, as such, should be applicable to these examples.

2.1 Knowledge Claims and Critical Thinking

Although writers on critical thinking each have their own ideas on what critical thinking entails, Ennis's (1987) definition provides a good starting point and will serve as a working definition in this dissertation: "Critical thinking is reasonable reflective thinking that is focused on deciding what to believe or do" (p. 10). As a program of study for schools or colleges, critical thinking's goal is to provide students with concepts, tools and practice to assist in the analysis of observations, statements, arguments, and other forms of communication in order to judge whether or not to accept the claims they put forward. Critical thinking has ties and overlap with informal logic, which tends to be taught mainly in philosophy departments, and argumentation, which has roots in linguistics. As commonly construed (e.g., by Blair, 1992), critical thinking involves two main components: the dispositions required to engage in critical thinking and the skills necessary to carry it out. Although much of the skill component involves analysis of the reasoning from premises to conclusions, this component also deals with the acceptance of statements from various sources. Acceptance involves addressing questions such as "When should claims of a factual nature be accepted?" and "What are the criteria for this acceptance?" This focus on sources is the component of critical thinking that is most applicable to claims of fact such as those put forward in Wikipedia.

2.2 Critical Thinking Criteria

To get a sense of how critical thinking addresses the acceptance of statements from sources, appeal will be made to a selection of critical thinking textbooks. Along with advocating goals for critical thinking such as Ennis's "reasonable reflective thinking," critical thinking textbooks also provide practical guidance for the critical thinker. This guidance is normally in the form of criteria for the critical thinker to apply, resulting in a criteria-based practice of critical thinking. The criteria for source acceptance from three critical thinking textbooks by Hitchock

(1983), Ennis (1996), and Fisher (2001) will be applied to the Wikipedia examples set out in Section 2.1. These criteria are the result of considered analyses by three leading proponents of critical thinking and can be considered exemplative, if not definitively representative, of the critical thinking approach.

Ennis addresses the issue of source acceptance in a chapter of his textbook (1996, pp. 58-64) entitled "The Credibility of Sources." What follows is the list of criteria from that textbook, along with the one-sentence descriptions he gives in another work, his taxonomy of critical thinking (1987, p. 10):

1. Expertise: "The person should have background training and experience appropriate for making the statement."

2. Lack of conflict of interest: "The person should have no apparent conflict of interest."

3. Agreement among sources: "The person should be in agreement with other people who satisfy the other criteria as well or better."

4. Reputation: "The person should have a good reputation for being right and telling the truth in general, and especially in the area of concern."

5. Use of established procedures: "Ordinarily the person should have used established procedures, if any exist."

6. Known risk to reputation: "The person should know that his or her reputation can be helped or hurt by the statement's being discovered to be correct or incorrect."

7. Ability to give reasons: "The person should be able to give understandable reasons in support of the statement. It is also generally desirable that the person actually do so, especially if asked for reasons."

8. Careful habits: "The statement maker should have careful habits in areas similar to the area of the statement."

Fisher (2001) discusses various skills and competencies required to "judge the acceptability, especially the credibility, of claims" (p. 8), and divides these into five categories (p. 93):

1. Person / source of claim: relevant expertise, ability to observe, etc, reputation as reliable, lack of bias

2. Circumstances / context of the claim

3. Justification sources can offer: firsthand versus secondhand reporting, primary versus secondary source, direct justification/evidence versus circumstantial evidence

4. Nature of the claim: is it likely, basic observation or inferred judgment

5. Corroboration: from other sources.

In his chapter on "Evaluating claims" Hitchcock (1983) focuses on sources of error in judging the credibility of the source. He does not formulate criteria as such, but identifies areas to watch out for that could be re-formulated in terms of criteria. A person making a claim might (p. 202):

1. be ignorant or misinformed about the subject (knowledgeable)

2. misinterpret what is seen heard, or otherwise perceived

3. know the truth, but unconsciously engage in self-deception (motives)

4. know the truth but intentionally deceive or mislead others (reputation, bias)

5. know the truth but speak or write carelessly or inaccurately.

Many of these criteria overlap or are related, and can be categorized and restated as follows. First, the criteria are divided into two types—those that address properties of the claim, and those that address properties of the source. Second, overlapping criteria are grouped, and a restated criterion is provided (in brackets) to represent the members of each group:

1) Properties of the Claim

- Nature of the claim (The claim should make sense): Circumstances / context of the claim (Fisher); Justification sources can offer (Fisher); Nature of the claim—is it likely, basic observation or inferred judgment (Fisher)

- Relation to other claims (The claim should be independently confirmed): Corroboration—from other sources (Fisher); Agreement among sources (Ennis).

2) Properties of the Source:

    a) Expertise (The source should have relevant expertise to speak on the subject): Potential source of error—be ignorant or misinformed about the subject (Hitchcock); Expertise (Ennis); Relevant expertise (Fisher)

    b) Stance (The source should be unbiased, or not intend to deceive): Potential source of error—unconsciously engage in self-deception (Hitchock); Potential source of error—intentionally deceive or mislead others (Hitchock); Lack of bias (Fisher); Lack of conflict of interest (Ennis)

    c) Diligence (The source should exercise due care): Ability to observe, etc. (Fisher); Careful habits (Ennis); Use of established procedures (Ennis); Potential source of error—misinterpret what is seen heard, or otherwise perceived (Hitchock); Potential source of error—speak or write carelessly or inaccurately (Hitchock); Ability to give reasons (Ennis)

    d) Reputation (The source should have a good reputation): Reputation (Ennis); Known risk to reputation (Ennis); Reputation as reliable (Fisher).

2.3 Critical Thinking Criteria and Wikipedia

This section will explore how the criteria proposed in critical thinking textbooks, as represented by the restated criteria put forward in the previous section, can be applied to claims put forward in Wikipedia. The first question to answer in this regard is: Should claims advanced in Wikipedia be evaluated using criteria directed towards properties of the claim or those directed towards properties of the source, or should both forms of evaluation take place?

Criteria involving properties of the claim address the nature of the claim and the relation of the claim to other claims. The first criterion (The claim should make sense) deals with the nature of the claim. The claims of fact advanced in these Wikipedia examples are neither internally inconsistent, nor display any other feature that would rule them out from further

consideration. As such, this first criterion is trivially satisfied by these claims, and no issues around the applicability of this criterion to Wikipedia statements arise.

Determining how to apply the second criterion, that of independent confirmation (The claim should be independently confirmed), is a more complex matter. What consideration should the student be expected to give to these claims in relation to this criterion? Although it is theoretically possible to devote time and effort to more in-depth examination of these or any other claims, it is not possible to do so for all knowledge claims encountered in everyday life. Consequently, claims of this sort must often be accepted or rejected without being investigated in detail. In addition, expertise as well as time is required to competently evaluate many claims of fact. In the case of the two examples under consideration, an average high school student cannot be expected to have either the time or the expertise to directly evaluate the claims. The claims are not about that which is simple or directly observable. Rather, they are complex claims that are based on a considerable body of knowledge—that of geography and politics in the case of Itanagar, and of medicine and the politics of its application in the case of the vaccine controversy. Although a student can reasonably be expected to understand what these claims mean, it is unlikely that the student will have the necessary background knowledge to directly evaluate these claims or the arguments that support them. As a result, many claims such as these are accepted without direct investigation as candidates for the student's belief, information on which to act, or premises for developing further arguments.

Even if the students are unable to evaluate the claims themselves, should they at least understand how to go about this sort of direct evaluation? Hitchcock (1983), for example, would seem to require this sort of understanding when he states at the beginning of his chapter on evaluating claims that

> you can't be expected to keep in your head factual information about every imaginable
>
> subject on which you could read or hear something, and you won't be asked to supply it.
>
> But you can be expected to describe what a claim implies, what sort of evidence would
>
> count for or against a given claim, how credible the source is which puts forth the claim,

where you could find an authoritative source of information on the claim, and how to go

about testing the claim directly (p. 186).

Again, even if it is theoretically possible to do so for all the knowledge claims that one encounters, time constraints make this level of assessment a practical impossibility. Further, even if the student has time to assess a claim in this manner, it is doubtful that she also has a mastery of the knowledge and complexity of argument necessary for even this more limited critical appraisal. For example, it is not reasonable to expect most individuals, and especially students at, for example, the high school level, to "know how to go about testing the claim directly" when the claim is "the measles vaccine contributes to autism." Knowledge of how to go about such testing requires specialized expertise.

Thus, although students cannot be expected to provide basic, direct evidence for this sort of knowledge claim, neither can they be expected to perform the due diligence that Hitchcock seems to require. In spite of the passage quoted above Hitchcock (1983) does acknowledges this limitation, going on to say that "every day we hear and read hundreds of statements about matters of fact ... A reasonable person will put as much credence in them as is justified by the circumstances in which they are uttered and by relevant background information" (p. 201). The bottom line is that many knowledge claims, be they complex or simple in nature, are accepted or rejected as proposed rather than subjected to further analysis.

The specific claims under consideration are knowledge claims of the sort that one might encounter in other information sources such as a conversation, a newspaper report, or a textbook. As such, there's nothing about the nature of these claims that would cause them to be either rejected out of hand or simply accepted at face value. If, as has been argued, constraints of time and expertise prohibit direct evaluation, attention must be turned to indirect evaluation of Wikipedia, the source of the claims. What is the result when criteria for the evaluation of sources are applied to Wikipedia?

Wikipedia is a source of claims. Are the criteria listed above for properties of a source (i.e., those directed to expertise, stance, diligence, and reputation) applicable to Wikipedia statements? Perhaps the most obvious issue is that these criteria are phrased in terms of

individuals as sources, and Wikipedia articles are not attributable to specific individuals. It is apparent, though, that application of these criteria is not intended to be restricted to individuals. For example, although Ennis (1996) phrases his discussion in terms of individuals he considers other sources to be evaluated in the same way—"think, for example, of how often in your daily life you accept something on the word of the newspapers and magazines, your teachers, your textbooks, your friends, etc." (p. 57). As there seems to be nothing *prima facie* to suggest that these criteria are not applicable to impersonal sources such as Wikipedia articles, the criteria will be interpreted under this assumption.

Wikipedia is an online information source, and has many characteristics that distinguish it from more traditional information sources such paper-based encyclopedias or textbooks. First, at least potentially, anyone with Internet access can add new articles or edit existing articles. Wikipedia is a product of volunteers who add or edit articles, and there are few barriers to participation. Second, Wikipedia is transparent. Its content is publicly available and can be accessed by anyone with an Internet connection, as can the records of any edits to that content. Changes are recorded and archived, and discussions regarding the content or editorial treatment of an article on associated "talk pages" are often longer by far than the article itself. Third, Wikipedia is fluid. Fluidity is generally characteristic of digital media on the Internet, as content can be changed and distributed more easily than with traditional paper-based media. Wikipedia is particularly fluid as it is designed to be editable in real time, with fixity reflecting at most a temporal consensus of an article's contributors.

In practice, this seeming free-for-all is constrained by a body of policy and a hierarchy of editors who enforce that policy. Wikipedia has three core policies regarding content: 1) *No Original Research*: editors and contributors are not to put forward anything original; rather, they are to report only what already exists. 2) *Verifiability*: anything reported in Wikipedia is to be cited, and 3) *Neutral Point of View*: "All Wikipedia articles and other encyclopedic content must be written from a neutral point of view, representing fairly, proportionately, and as far as possible without bias, all *significant* views that have been published by reliable sources" ("Wikipedia: Neutral Point of View," n.d.). Enforcement of these policies is not consistent, and depends on an

evolving body of subsidiary policies and guidelines as well as the existence of individuals who care sufficiently about particular areas of content to ensure vigilance. Although it is possible to make arbitrary additions and changes to Wikipedia, checks and balances ensure that much new content is reviewed, and that many arbitrary changes are reversed within a very short period of time. Given the structure of Wikipedia and the practices that are associated with it, how well does it stand up against the critical thinking criteria that address properties of sources? The following will make a preliminary evaluation of Wikipedia according to these criteria, and a more detailed evaluation of Wikipedia will be undertaken in Chapter 3. Evaluation of individual Wikipedia statements is an even more complex matter, and this issue will be further examined in Chapter 3 as well.

The first criterion relating to properties of the source addresses expertise (The source should have relevant expertise to speak on the subject). One of the major issues with Internet sources in general is that it is often difficult to verify the expertise of the individual or individuals responsible for the source's content. This problem of verification is particularly acute with Wikipedia, where authorship is anonymous and, as a result, the expertise of the author or authors is largely unknown. This issue is explicitly recognized by Wikipedia—"the expertise or qualifications of the user are usually not considered" ("About Wikipedia," n.d.). Also, due to the fluidity of Wikipedia, even if an article has been written or edited by someone with a certain amount of expertise, there is nothing to stop someone with less expertise from further editing that article. As such, it is very difficult if not impossible to determine the expertise behind any given Wikipedia article. Although the "No Original Research" core policy is applicable to any Wikipedia article, and the sources for all information in articles are to be cited so that the information is verifiable, the result is that the burden of proof for expertise is transferred to those sources. Without extensively investigating those sources it is unclear if they are comprehensive, representative, or correctly represented in the Wikipedia article.

The second criterion relating to properties of the source addresses stance (The source should be unbiased, or not intend to deceive). Although the official Wikipedia policy of "Neutral Point of View" addresses the issue of appropriate stance, there is no guarantee that any particular

article adheres to this policy. Like expertise, the stance of a Wikipedia article cannot be verified other than by having some acquaintance with the issues, and thus knowing how the issue is framed. Unlike other genres such as news reports that operate, at least ostensibly, under the premise of objectivity and a neutral stance, there's no guarantee that Wikipedia contributors have either the desire or ability to take a neutral approach. Furthermore, the contributors' anonymity leaves little chance to investigate these desires and abilities. As with any of these issues in the Wikipedia environment, the degree to which the "Neutral Point of View" policy is enforced will depend on the article.

The third criterion relating to properties of the source addresses diligence (The source should exercise due care). The overall structure of Wikipedia and the fact that articles are subject to policies and editorial control of some sort promotes a greater exercise of diligence than Internet sites that do not cite sources and give no clues as to credibility, expertise, or stance. Although the Wikipedia framework does provide for the exercise of diligence as required by the critical thinking criteria, it is unclear whether and how this diligence has been exercised on the level of an individual article.

The fourth and final criterion relating to properties of the source addresses reputation (The source should have a good reputation). Wikipedia has a mixed reputation. Numerous analyses of Wikipedia have been undertaken, and warnings given with recommendations from "use with caution" to "avoid." Overall, the literature gives little cause to consider Wikipedia to be a reputable source in the sense that it can be referred to both as a first and last resort (Chandler & Gregory, 2010; Harouni, 2009). Wikipedia itself states that "You should not use Wikipedia by itself for primary research (unless you are writing a paper about Wikipedia)" ("Wikipedia: Researching with Wikipedia," n.d.).

Although a more detailed examination will be undertaken in the next chapter, this preliminary analysis indicates that when judged by the criteria put forth in the critical thinking textbooks Wikipedia should not be considered to be a reliable source of information. However, Wikipedia is commonly used as a source of knowledge (Rainie & Trancer, 2007), and there is some research indicating that Wikipedia articles are indeed accurate, or at least as accurate as

some traditional reference sources ("Britannica attacks," 2006; Giles, 2005; Lih, 2004). Should the initial judgment, which finds Wikipedia wanting when measured against critical thinking criteria, prevail, and should Wikipedia be avoided as a source of factual information?

A second possibility is that the above analysis, which suggests rejection of Wikipedia by reference to these criteria, demonstrates a heavy-handed application of the criteria. It is possible that simply referring to the explicit criteria set out in the textbooks gives short shrift to critical thinking, and does not properly take into account its broader goals. Critical thinking practice might require more nuance, perhaps leading to a more qualified result that sets out what acceptable use of Wikipedia is—a use that might, for example, include the above admonition that Wikipedia should not be used by itself for primary research. However, as previously indicated, Wikipedia is frequently used as a primary source. Information in Wikipedia is relatively easy to find and access; easier, in many case, than in the sources it cites. Furthermore, it often contains information that is not readily available or easy to access in a more credible source.

There is a third possibility, namely, that the criteria as set out are insufficient. There is no reason to discount the particular criteria found in the selected textbooks, which readily classify under the headings of "Properties of the claim" and "Properties of the source," as these criteria represent the summary of a good deal of thought by critical thinking experts. However, it is possible that sources such as Wikipedia have unique characteristics that the examined criteria do not account for, and that additional or alternative criteria should be considered. For example, it has been suggested that Wikipedia might be reliable because of what's known in popular terms as the "wisdom of crowds," or because of the innate nature of people to act in a largely cooperative manner (Fallis, 2008). Should criteria based on these or related considerations be formulated for application to sources such as Wikipedia?

These latter two possibilities bring up questions regarding the grounds for using existing criteria or proposing new criteria. Attention so far has been focused on the practical aspects of critical thinking and its application. However, significant work has been done in critical thinking theory as well. Although specific criteria might reflect "good sense" or "common sense," critical

thinking theory might be expected to provide a deeper and more solid foundation on which criteria can be based and to which they can appeal for guidance in their application.

Consideration of the issues examined so far suggests that the foundational theory of critical thinking should be investigated. In particular, what provides the grounds for both existing criteria and potential new criteria for the evaluation of knowledge claims in information sources, or, if simple reference to criteria is not sufficient, what provides the grounds for determining what sort of an approach should be taken?

2.4 Foundational Theory of Critical Thinking

Why should critical thinking criteria be applied to claims of fact in the first place? Claims of fact are truth claims, and the argument must be that the application of critical thinking criteria will help differentiate claims of fact that are indeed true from those that merely purport to be so. According to Hitchcock (1983), in "trying to evaluate the reliability of the source of the claim ... we're implicitly trying to construct an argument from the reliability (or unreliability) of the source on this question in these circumstances to the truth (or falsity) of the claim" (p. 201). Blair (1992), who discusses critical thinking in terms of "well-managed beliefs," notes that "this critical appreciation of the reliability of sources is of utterly central importance to good doxastic management, for most of our beliefs derive from the affirmations of sources of information" (p. 126). He goes on to note that "the ultimate rationale for maintaining a well-managed belief system is that it is more likely to produce true beliefs, and to issue in successful action choices, than any alternative method" (p. 126). Although both Hitchcock and Blair have clear ideas of what the outcome of the critical thinking process should be, neither provides a theoretical explanation of how the application of the criteria that they propose will ensure this outcome. This practice of proposing practical criteria without theoretical backing is common amongst critical thinking theorists—many propose criteria for critical thinking, or particular expressions of what critical thinking should be, but few address the underlying foundational issue of why and how critical thinking should be truth conducive.

Siegel has produced what is arguably the most well-developed foundational philosophy of critical thinking. Kilby (2004) notes that "among mainstream proponents of critical thinking, Siegel's work stands out in its attempt to deal with the fundamental philosophical issues that underlie theories regarding critical thinking skills and dispositions" (p. 299). Weinstein (2003) offers similar praise, claiming that with *Educating Reason* (Siegel, 1988) "Siegel offered the most detailed defense of critical thinking in the current literature" (276). These comments suggest that Siegel's philosophy of critical thinking would be a good place to start when looking for grounds for critical thinking criteria. Further, the epistemic nature of his theory is particularly relevant to the criteria under consideration here, which address knowledge claims from information sources.

Siegel begins by proposing a concept of critical thinking that associates it with rationality, stating that

> critical thinking is best conceived ... as the educational cognate of rationality: critical thinking involves bringing to bear all matters relevant to the rationality of belief and action; and education aimed at the promulgation of critical thinking is nothing less than education aimed at the fostering of rationality and the development of rational persons (1988, p. 32).

As such, Siegel's conception of critical thinking practice is generally compatible with Ennis's definition, "critical thinking is reasonable reflective thinking that is focused on deciding what to believe or do" (1987, p. 10), which was set out in Section 2.1 as a working definition of critical thinking. Both involve rationality or reasons, and are directed to belief or action.

However, not everyone shares this concept of critical thinking—in fact, there are about as many conceptions of critical thinking as there are critical thinking theorists. McPeck (1990), for example, argues that critical thinking is not co-extensive with rationality, but is instantiated differently in different disciplines, and that "specific subject content determines the required ingredients for thinking critically in each case" (p. xiv). Ennis (1987) views critical thinking as primarily a collection of particular capacities and skills. He defines critical thinking in terms of reason and reflection, and goes on to say that this "process of reflectively and reasonably deciding what to believe or do can be broken down into a set of ... dispositions and abilities" (p. 11).

Others such as Martin (1992) argue that considerations other than rationality, in her case justice, must be included in the conception of critical thinking. However, Siegel's concept will be the focus here for the reasons stated above—first, the depth of the associated theory he provides, and second, its epistemic nature which is particularly applicable to the questions at hand regarding truth claims.

In epistemology, knowledge is standardly defined as "justified true belief."[4] Siegel holds epistemic considerations central to rationality, for "as far as rationality is concerned, it is the belief and the evidence for/against it, rather than the process, that is key" (2007, p. 215). He equates justification with having good reasons, stating that "belief in some claim ... is justified when there are good reasons which support that claim, and the believer believes it for those reasons" (1989a, p. 129). Good reasons are thus construed in epistemic terms—"on the view I favour, the normative force of reasons is determined wholly by their epistemic quality" (2005a, p. 545).

Having good reasons for accepting a statement is independent of that statement's truth, as "truth is *independent* of rational justification: we can be justified in believing that *q* even though *q* is false; and we can be justified in rejecting *q* as false even though it is true" (1989a, p. 132). This independence of truth and justification allows for, and is coupled with a realist notion of truth.

> The key feature of this realist view of truth is that truth is independent of the beliefs of epistemic agents: our thinking that something is true does not make it so; what does make it so is its successful capturing of some independent state of affairs which obtains independently of our thinking that it does (1999, p. 23).

For Siegel, this realist notion of truth is essential to the critical thinking project, as it provides the goal that the project strives for, and a means of evaluating success. Good reasons for holding a

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[4] Although this definition, like everything in philosophy, is subject to disagreement, there is a certain amount of consensus regarding need for the justification and truth conditions of knowledge. Most debate is on the need for, and formulation of additional condition(s) to satisfy issues raised by the Gettier problem (Gettier, 1963) and similar puzzles.

belief are those that support a judgment that the belief is true. Thus, although truth and justification are independent, Siegel claims that our best chance of attaining true beliefs is to attain justified beliefs.

> We have no immediate or privileged access to the truth; we 'get at' the truth by assessing warrant. We take justification to be a sign of truth. Truth thus functions for us, as Kant might say, as a *regulative ideal*; the *upshot* of justification is a prima facie case for truth (1989a, p. 137).

Although justification points to truth, it does not provide certainty, as "what is justified now can be overturned (both by additional evidence and by further reflection) and become unjustified, later. Thus we come to the doctrine of fallibilism: while there is truth, there is no certainty" (1989a, p. 137). For Siegel, then, truth and justification are independent but related. Beliefs held on the basis of good reasons track truth, and truth provides a standard, independent of those reasons, against which to measure beliefs.

Siegel has provided, over many years and many publications, different versions of essentially the same *reductio ad absurdum* argument to make a connection between truth and reason. One incarnation of this argument is addressed to relativism, the doctrine that justification is relative to the individual or context providing the reasons, and thus not something that can be judged against the objective standard that truth provides. A schematic of Siegel's argument against relativism follows. Consider the statement ER: Any knowledge claim *p* can be only evaluated according to particular background criteria. In other words, there are no neutral criteria against which to evaluate *p*. If *p* is replaced by ER, then the resulting ER', depending on the criteria used to evaluate it, could be either true or false (1987, p. 6-8). This argument, Siegel claims, shows ER to be "self-refuting, and so incoherent" (p. 8). To quote another more succinct example of his application of a similar *reductio*: "Rationality can be seen to be self-justifying, in that seriously querying the justificatory status of rationality presupposes that very status" (1989b, p. 399). Consequently, there must be some objective grounds for adjudicating claims and rationality must be able to provide guidance as to the truth value of statements.

Siegel's argument and position has drawn substantial criticism over the years. Some have directly challenged Siegel's argument. For example, Elgin's (1984) counter argument, applied to the above formulation of ER, is that if "only" is omitted from "be only evaluated according to certain standards" different criteria might validly apply to *p*, resulting in conflicting, but not logically contradicting evaluations, and thus not providing the *reductio* that Siegel desires (p. 43). Ennis (1989) argues that Siegel's defense is valid only if someone is prepared to enter Siegel's debate and on Siegel's terms, and that a questioner could ignore the question altogether or, if the questioner disagrees with Siegel's conception of "good reasons," dismiss his argument. Govier (1987) comes to a similar conclusion, stating that "the problem with Siegel's argument is very obvious. The question is begged in his definition of 'good reason'" (p. 288).

Others challenge Siegel's concept of rationality, arguing that it is either wrong or incomplete. Burbules (1995) argues for an account based on postmodern thought, claiming that

reasoning can be conceived in different and in broader terms than simply in terms of rationality. Yet the literature in the philosophy of education has been slow to pursue this line of inquiry ... the chief philosophical writers in education who focus on reason or critical thinking ... consider any attempt to discuss alternative rationalities as tantamount to creeping relativism (p. 83).

McCarthy (1994) supports a pragmatic account of rationality, for, "as Siegel also notes, we don't seem to be in possession of a fully worked out theory of rationality" (p. 74) and goes on to argue for a pragmatic approach to judgments rather than an approach based on what she claims is a concept of rationality that is inadequate to apply to these judgments. Weinstein (1992) claims that criteria for rationality need to be based on non-philosophical considerations and on the normative practice of discursive communities, claiming that "an adequate epistemological theory of justificatory reasoning requires moving beyond the level of abstraction characteristic of philosophical discourse, and towards an account that identifies the epistemological role of normative practices across the range of well-constituted disciplines" (p. 244). As a final example, Selman (1988) states that "while Siegel is surely correct that rationality is transcendent, he ignores

... that rationality is also immanent, that is, that rationality exists only as articulated in actual languages and cultures" (p. 263).

Siegel has answered many of these criticisms, and although these answers might not be completely satisfactory to his critics he has not seen anything in these critiques to cause him to substantially change what has been a remarkably consistent position over the years. Siegel maintains this consistency in part because he considers many of these critiques to be in at least partial agreement with his position, and hence not as substantial as they might appear on first reading. Of particular interest here are the objections such as Weinstein's and Selmen's that accuse Siegel of not supplying a sufficiently rich concept of rationality to generate the practical criteria needed for day to day rational decision making. Providing such an account, Siegel says, has never been his project. For example, in his reply to Weinstein he states that "I agree with Weinstein that philosophical argument, or *a priori* reasoning, cannot resolve outstanding, largely extra-philosophical problems which are in need of resolution" (1992b, p. 268).

The point remains, however. The issue under consideration here involves criteria that can be applied to claims of fact such as the examples found in Wikipedia. To what extent does a foundational theory like Siegel's aid in the selection and application of these criteria? As Weinstein notes,

> the question for epistemology and critical thinking, in the sense that Siegel intends, is how far *a priori* critiques that show, possibly profound, limitations to philosophical constructions take us into the arena of our concerns. Thus the value of the *a priori* must be ascertained in contrast to the issues about which the *a priori* remains silent (1992, p. 244).

There is thus a gap between the guidance Siegel's philosophical theory of critical thinking can provide and considerations that must factor into criteria production. This space is between theoretical arguments for justifying critical thinking itself and the actual application of critical thinking; in particular, the criteria used in this application. What is missing is theoretical justification for the selection and application of these criteria. An open question is whether philosophical considerations can bridge at least part of this gap and provide grounding for

particular criteria, or offer theoretical foundations for choosing which particular criteria will be most likely to produce the true belief that Siegel sets out as the goal of critical thinking.

In the postscript to his book *Educating Reason* (1988) entitled "Towards a theory of rationality," Siegel reiterates his argument for "an intimate connection between the notions of critical thinking and rationality" (p. 127). Summing up his analysis at the end of the chapter, he goes on to state that

> this suggests two facts about the theory of critical thinking. First, that theory is itself not philosophically deep, but rests upon the philosophy of rationality. Second, consequently, critical thinking theory and practice requires taking stances on, and certainly recognizing the importance of, deep philosophical questions ... for example, concerning the limits of rationality, the justification of rationality, the alterability of principles of reason assessment, and the constitution of rationality itself ... The theory of critical thinking cannot be conceived of as insulated from the broader philosophical context in which it is embedded (p. 136).

Siegel thus points to theories of rationality for further development of critical thinking theory. However, given the epistemological nature of Siegel's theory it would seem that attention could also be paid to the philosophical study of epistemology itself. Work in that field might well be applicable to critical thinking theory, and potentially used to close some of the gap between Siegel's theoretical work, which provides theoretical grounding for the critical thinking project, and theoretical work that can ground the selection of critical theory criteria for application in day to day practice.

There is, in fact, an area of contemporary epistemology that addresses the sort of knowledge claim under consideration here—the study of testimony. The critical thinking literature makes little or no reference to this literature. Freeman (2005), writing in the related discipline of argumentation theory, provides an exception. Although he devotes an entire chapter to testimony the only work he references in any detail is Coady (1992), and he does not deal with the considerable literature that has been published since. Work in the philosophy of education is similarly bereft of references to this literature. Robertson (2009) is one of the few philosophers of

education to speak of knowledge from other sources in terms of testimony, stating that "it is evident that much of what any individual believes derives from the testimony of others, through what others have said or written" (p. 23). She also notes, but does not address, the area of concern here.

> The philosophical literature on testimony seems largely to be framed in terms of face-to-face interactions between speakers and hearers, but I assume that the analysis is intended to cover writers and readers as well. Yet some strategies for establishing the trustworthiness of speakers can be difficult or impossible to apply to writers—knowing something of their character and circumstances, for example, or picking up on body language or other clues to lack of sincerity. I do not explore these issues further here (p. 31).

2.5 Critical Thinking Practice and Critical Thinking Theory

Although the philosophical literature on testimony has not received more than cursory mention in the literature of critical thinking, the fact that testimony addresses the same general problem as the area of critical thinking under consideration here, the evaluation of claims of fact, suggests that further investigation is worthwhile. The remainder of this dissertation will explore the potential applicability of the philosophical literature on testimony to foundational issues in critical thinking.

At this point, two outstanding problems have been identified—one practical, and the other theoretical. The practical problem is to ensure that critical thinking criteria sufficient for application to a source like Wikipedia are identified for the critical thinker, and that sufficient guidance in the use of these criteria is supplied so that these criteria can be properly applied. The hope was that the requisite guidance for the identification and application of these criteria could be ascertained by reference to critical thinking theory. However, the existing theory does not give the guidance necessary to address the practical problem. The theoretical problem, then, is that the theory of critical thinking, and in particular, Siegel's epistemology of critical thinking, does not provide the necessary grounding for the practice of critical thinking. The suggestion has been that

the literature of testimony might supplement the current theory of critical thinking in such a way as to provide the requisite grounding. But before exploring this particular solution to the theoretical problem, it will be helpful to further examine the practical problem in order to enable a more specific formulation of that problem, and the particular guidance that critical thinking theory is expected to provide. The nature of this practical problem, in particular, the application of critical thinking criteria to Wikipedia, will be further examined in the chapters to follow.

3. WIKIPEDIA

This chapter will undertake a more thorough examination of Wikipedia. It will begin by examining Wikipedia in the context of other Internet resources, and will go on to provide a characterization of Wikipedia that makes it more amenable to the application of critical thinking. Finally, it will look more closely at the issues arising when the currently identified criteria of critical thinking are applied to Wikipedia so characterized.

3.1 Wikipedia and Other Internet Content

This section will look at Wikipedia in the context of other Internet resources, and explain why Wikipedia was selected as the example for this dissertation to focus on. This dissertation is concerned with issues around evaluating non-traditional sources of information, in particular Internet-based resources, from the perspective of a student in an educational setting seeking authoritative sources of information.

The first factor when choosing an example is that the example should be representative of the Internet. It should demonstrate characteristics common to other Internet resources that are not characteristic of traditional resources, and be well-known as an Internet resource. Second, the example should have a legitimate claim to be an authoritative source of information, in the sense that it is a source that individuals can turn to for information that they do not need to independently verify. There is no need to establish the resource as authoritative, but the source should claim to be an authoritative source of information and this claim should be generally recognized even if the authoritativeness is contentious.

Determination of whether a resource can be representative of the Internet necessitates a quick overview of the Internet itself. From a technical perspective, the Internet is an interconnected network of computer networks (Castells, 1996). The power of the Internet arises from a number of protocols that were developed to enable the transfer of different data types over these connected networks. Early protocols include the Telnet protocol, which allows direct connections between individual computers, FTP, which enables file transfer, and email protocols such as Simple Mail Transfer Protocol (SMPT) and Internet Message Access Protocol (IMAP).

Protocols such as GOPHER and VERONICA were developed to enable not only the transfer of data, but to provide a structure for the organization of information conveyed by that data. The HTTP protocol provided the foundation of the World Wide Web, and the subsequent development of browsers such as Netscape, Internet Explorer, and Chrome made the content available through the World Wide Web easily accessible to the general public (Cassel & Austing, 2000).

The term "Internet" is used in common parlance to refer to both the interconnected networks and to content delivered over those networks. Various approaches can be taken to the classification of Internet content. From the technical perspective, this content can be classified by the protocol used to deliver the content or by the content's media type (text, audio, etc.). A more useful perspective for the present purpose is to focus on what can be termed the "communication pattern" of the resource, which describes the relation between creator and audience. Berthon, Pitt, Plangger and Sharpio (2012) use communication patterns to distinguish broadcast media from social media. According to them, broadcast media demonstrate a one-to-many communication pattern in which content produced by one person or group is broadcast to large numbers of people who consume the content. Social media, by contrast, demonstrate a many-to-many communication pattern by which individuals can be either creators or consumers of content. Before looking at examples of these two types of communication pattern it is worth nothing that another common communication pattern is one-to-one, whereby one individual communicates with another individual. While examples of one-to-one communication on the Internet such as email and instant messaging can be easily found, this mode of communication is not unique to the Internet, as one-to-one communication is also characteristic of non-Internet forms of communication such as the telephone and letter-writing.

Non-Internet examples of one-to-many communication include traditional broadcast media such as radio and television as well as traditional forms of publication such as newspaper publishing, the mass press, and scholarly publishing. As Couldry (2009) notes, "media-related practices have so long been configured in a particular one-to-many pattern that the mass communication paradigm … is summed up in the English term 'the media'" (p. 437). Parallels to these forms of non-Internet distribution can be found on the Internet as well, as content producers

utilize this new mode of distribution. In their analysis of the impact of social media on traditional print media Wikstrom and Ellonen (2012) propose a categorization of "social media applications … as either services or features. Services are stand-alone applications such as Facebook, Twitter, Flickr, YouTube, etc., while features are smaller applications or widgets, which are not able to exist as stand-alone services by themselves" (p. 65). When traditional media move to the Internet, or establish an Internet presence, they often add social media features to what remains a traditional media resource. For example, the online version of the *Edmonton Journal* provides similar content to its print version, but adds social media features to offer more opportunity for reader feedback than the traditional "Letters to the editor" section of the print newspaper. As well, the Internet is home to non-traditional types of one-to-many distribution that are unique to the Internet itself. One of the earliest and still prevalent forms is the Internet "site" which is a cluster of web pages and associated content produced and maintained by an individual or group. While some of these sites are protected, with access only given to members or to those willing to pay, many Internet sites are available to anyone who chooses to navigate to the site.

One-to-many and one-to-one communication patterns are thus common to both Internet and non-Internet resources. Although it is possible to come up with non-Internet examples of many-to-many communication (e.g., the interaction of party-goers or conference participants), many-to-many communication as a resource feature is primarily an Internet phenomenon, and is the distinguishing characteristic social media. This type of communication has pre-Web origins in Internet news groups and email distribution lists, and came into public notice on the World Wide Web in the form of web logs, or, in popular parlance, blogs (Berthon, Pitt, Plangger & Shapiro, 2012). Blogs are similar to one-to-one modes of communication in that the content of a blog is produced by an individual or group. They are social in nature as blog postings can be opened up to comments and discussion from readers, and the blog technology itself is sufficiently open that almost anyone can start their own blog. While blogs were initially text-based, they came to incorporate other media as the capabilities of the Web expanded. Later generations of social media include services that specialize in particular media types. For example, Flickr enables users to share images, and YouTube enables users to share videos. The upsurge of these other media

types did not diminish the use of text on the Internet, and other services such as micro-blogs (e.g., Twitter) were developed to enable the posting of short text messages. The amount of content produced through these services would be overwhelming without some sort of organization, and many of these services provide navigation aids in their site structure, or offer search capabilities or permit indexing by services such as Google. Other services allow an individual to follow the content added by particular individuals, and some services (e.g., MySpace and Facebook) are organized around these networks of individuals (Berthon, Pitt, Plangger & Shapiro, 2012).

Wikipedia provides another example of the many-to-many mode of communication, but makes different uses of this mode of communication than do most resources that are characterized as social media. For example, Wikipedia is not structured around a network of individuals, nor does its primary content, the Wikipedia articles themselves, reflect the to-and-fro debate between those posting comment and those responding to those posts. Although it does provide venues for direct communication between individuals in a one-to-many mode, this occurs primarily in content such as discussion pages that are adjunct to the articles. However, Wikipedia is reliant on the many-to-many mode of communication in that anyone can view these articles, and anyone willing to follow Wikipedia's procedures can create or edit articles. Wikipedia thus exhibits the characteristic of many-to-many communication that is unique to Wikipedia resources. Further, Wikipedia is a generally recognizable Internet resource, and as such, it fulfils the first criteria for an example set out at the beginning of this section.

The second requirement set out at the beginning of this section for an example is that the resource should have a legitimate claim to be an authoritative source of information. Traditional encyclopedias are generally recognized as authoritative sources of information, and by positioning itself as an encyclopedia Wikipedia claims to be an authoritative source of information. However, Wikipedia does exhibit significant differences from traditional encyclopedias (Lih, 2009) and it might be asked if this claim to be an encyclopedia, and hence an authoritative source of information, is legitimate. In order to answer this question, Wikipedia needs to be examined in the context of more traditional encyclopedias.

Loveland & Reagle (2013) provide such an examination. They position Wikipedia in the context of other encyclopedias by contrasting their view of the history of encyclopedia production with that proposed by Pink (2005). Pink sets out three eras of encyclopedia production, with characteristics of the latter eras replacing those of the earlier eras. The first "One Smart Guy" era of encyclopedia production saw encyclopedias attributed to single individuals, or to a small group headed by a single individual (e.g., the works of Pliny the Elder and Diderot). This mode of production was replaced in the second "One Best Way" era by editors who coordinated and aggregated the work of specialist authors who wrote articles in their area of expertise (e.g., Encyclopedia Britannica). This mode of production, in turn, was replaced by the "One for All" era where encyclopedia production is the cooperative result of really large numbers of individuals who may or may not be specialists (e.g., Wikipedia). As such, Wikipedia can be seen to be quite different from other encyclopedias.

By contrast, Loveland and Reagle look at the history of encyclopedia production and see many similarities between Wikipedia and those earlier encyclopedias. They "focus on three overlapping forms of encyclopedic production: compulsive collection (production by the prodigious information-gathering efforts of individuals), stigmergic accumulation (production by accretion onto a previous text), and corporate production (production by a group)" (p. 1295). Looking at encyclopedia production from this perspective "one can find surprising similarities between today's Wikipedia and older works" (p. 1295), and Wikipedia can be seen to demonstrate characteristics of all three modes of encyclopedic production. They conclude that "it is important not to exaggerate the discontinuities between Wikipedia and its predecessors ... [and that] the continuities between Wikipedia and past encyclopedias are numerous and significant" (p. 1305).

Loveland and Reagle present convincing arguments for their account of encyclopedia production over Pink's. Based on their analysis of encyclopedia production, it can be concluded that Wikipedia borrows sufficiently from the familiar and established genre of "encyclopedia" in the print world to at least make a legitimate claim to be an encyclopedia, and thus to be an authoritative source of information. As such, Wikipedia fulfils the second criteria set out for an Internet example.

Wikipedia is thus well-known, exhibits distinctive features that identify it as an Internet resource, and can make a legitimate claim to be an authoritative source of information. While other contenders could be proposed as examples for this dissertation to focus on, Wikipedia fulfills both of the conditions set out for such an example at the beginning of this section. Further, it is a resource that is used extensively by students, and provides particular challenges in the education sector. Those factors provide additional motivation to select Wikipedia as an example for the application of critical thinking.

3.2 Wikipedia Characteristics

Wikipedia was launched in 2001. It was an immediate success, and by 2003 it had passed the 100,000 article mark. Growth has continued, and as of October, 2013 there were well over 4.2 million articles in the English language version of Wikipedia alone ("Wikipedia: Size of Wikipedia," n.d.). Wikipedia use has paralleled its growth. Zickuhr and Rainie (2011) report that the percentage of American adults using Wikipedia increased from 25% in February 2007 to 42% in May 2010, and the percentage of American Internet users using Wikipedia rose from 35% to 53% during the same time period. They also found that Wikipedia use is predicted by education level, and was used by 69% of American Internet users with at least a college degree. Another report by Purcell et al. (2012) of middle and high school student research practices found that 75% of teachers surveyed stated that students were very likely to use Wikipedia or another online encyclopedia for a typical research assignment. This level of usage lags behind that reported for Google and other search engines (94% of teachers surveyed stated that students were very likely to use these resources), but is well ahead of any other type of source in either digital or non-digital format.

Wikipedia was founded by Internet entrepreneur Jimmy Wales along with Larry Sanger, a graduate student in philosophy who later completed his PhD dissertation (Sanger, 2000) on epistemic circularity. Wales has stayed with the project and continues to provide it with overall guidance. Sanger left in 2002, in part because he felt that expertise was not being given sufficient emphasis in article creation (Tiwari, 2007). Sanger's disgruntlement goes back to the genesis of

Wikipedia as a side product of Nupedia, which was launched in 2001 as an online version of a traditional encyclopedia. Nupedia consisted of peer reviewed articles created by experts in their fields, and Sanger was recruited by Wales as editor. However, Nupedia got off to a slow start and failed to attain a sufficient critical mass to sustain the project. By 2003 Nupedia was shut down, and Wikipedia was well on the way to success. Sanger, meanwhile, had left Wikipedia and gone on to found Citizendium (the Citizen's compendium of everything) in 2007. Citizendium differs from Wikipedia by requiring real names and not allowing anonymity, and by recruiting subject experts to provide editorial control over all content (Lih, 2009). While still officially active, Citizendium has turned out to be but another footnote in Wikipedia's history. As of March 2015 Citizendium claims to have over 16,000 articles at various stages of development, but fewer than 200 which have been approved by experts and are deemed citable by Citizendium standards ("Welcome to Citizendium," n.d.).

Wikipedia has many features that distinguish it from traditional encyclopedias as well as from other online information sources. These features derive from Wikipedia's policies as well as its underlying technology and the particular affordances which that technology offers. The following identifies a set of these features that can serve to characterize Wikipedia.

3.2.1 Neutral

Wikipedia's core policies address what content should and should not be included. These policies are: 1) Neutral Point of View, 2) No Original Research, and 3) Verifiability ("Wikipedia: Neutral Point of View," n.d.). Wikipedia's central policy, "Neutral Point of View" (NPOV) calls for neutrality if not objectivity. This policy acknowledges that content is not neutral, and that many topics can be presented only from a particular viewpoint. However, these viewpoints are to be acknowledged as such, and all significant viewpoints on an issue are to be represented. If a topic is disputed, the article is to present a fair presentation of all sides of the dispute. Wikipedia does not try to be objective by removing perspective or viewpoint, but to be neutral by making perspective or viewpoint explicit.

According to Lih (2009), a noted Wikipedia analyst, Jimmy Wales considers NPOV to be the only nonnegotiable Wikipedia policy. Wale's belief that it's possible to adhere to a neutral stance is in part based on his interest in Ayn Rand's objectivist philosophy. Objectivism in this sense holds that "there is a reality of objects and facts independent of the individual mind. By extension, a body of knowledge could be assembled that was considered representative of this single reality" (p. 36) Wales felt that it was possible to create an encyclopedia that would reflect this body of knowledge, and, as Lih (2009) puts it, "could detail what is true in the world without judgments" (p. 36). Regardless of what one might think of Wales's rationale for NPOV, Wikipedia's success would appear to vindicate NPOV's value as a guiding policy. To what extent NPOV is realized in practice and Wikipedia actually achieves neutrality and objectivity is a matter of debate and a subject for research. If nothing else, NPOV does enable people from diverse backgrounds and of diverse opinions to work together on the project.

3.2.2 Derivative

The second core policy is "No Original Research." Wikipedia is not to be used for original ideas or research, but to report on what has already been published. Although this policy has been subject to significant criticism, the criticism is often based on a misunderstanding of Wikipedia's policies. A recent example that received considerable play in the media serves to illustrate. Timothy Messer-Kruse is a historian whose research focus is a period of American labor history centered on a pivotal event, the Haymarket riot and trial of 1886. He is an acknowledged expert on the event, the circumstances leading up to it, and its later consequences and effects. In the course of his research he reached conclusions that conflicted with what, up until then, had been received opinion. When he edited the Wikipedia article on the trial to reflect these conclusions his edits were undone by Wikipedia editors on the grounds that he was not citing reliable secondary sources. After publishing a book on the subject, he tried again to edit the article, this time citing his book. These edits were removed on the grounds that he was giving "undue weight" to his own work as opposed to a significant body of contrary opinion in the literature (Messer-Kruse, 2012).

Although this might appear to be a reactionary approach that bars new information from Wikipedia, it is an example of Wikipedia's "no original research" policy in practice. From the perspective of the Wikipedia editors, who are not experts on the subject, it is difficult if not impossible to distinguish crucial and conclusive refutations of what subject experts had previously held from minority opinion or even amateur musings on the topic until those conclusions find their place in received scholarship and are documented as such. Messer-Kruse could have noted that he had come to conclusions in his published research that were at odds with received scholarship. Properly documented and thus flagged, the edit might well have stood. However, he simply changed the facts in the article itself. This sequence of events was discussed on the article's accompanying "talk" page, and this discussion eventually led to the incorporation of Messer-Kruse's findings in the article. As Rosen (2012) notes in her comments on the affair, the result is to the credit of Wikipedia—first, that it did not immediately accommodate changes that were not in accordance with its policy; second, that it was attentive to the issue; and finally, that (at least according to Rosen) it got it right in the end. As she notes, "if Wikipedia hesitated to change its article ahead of the scholarly consensus, that is an artifact of academia's own inability to quickly adopt a new consensus, not a failing of Wikipedia" (para. 7).

3.2.3 Verifiable

Wikipedia's third core content policy is "Verifiability," according to which Wikipedia content must be attributed to reliable sources. Whereas "Neutral Point of View" specifies Wikipedia's goal and "No Original Research" guides its practice, "Verifiability" enforces that practice. According to Wikipedia, verifiability means that "all quotations and any material challenged or likely to be challenged must be attributed to a reliable, published source" ("Wikipedia: Verifiability," n.d.). Although guidelines on what constitutes a reliable source are provided ("Wikipedia: Verifiability," n.d.), determination of what constitutes a reliable source ultimately falls to the Wikipedia community.

Care must be taken in reading too much into this policy, as the term "verifiability" is used differently in Wikipedia than in philosophy or even in common parlance. In the latter case, a

statement is said to be verified if it has been found to be true. An unverified statement is one that has not been found to be either true or false. In the Wikipedia sense, a statement is said to be verified if a reliable source has been cited in its support, while an unverified statement is one that does not have this support. Statements by popular commentators such as "the threshold for inclusion in Wikipedia is verifiability, not truth" (Reagle, 2010, p. 163) might suggest that Wikipedia is not concerned with truth. However, all the policy does is to specify attribution as a minimum requirement and require that the source be reliable. Wikipedia does not look for "verification" in the sense of "finding to be true," but defers this task to the cited sources. Rather than reflect disinterest in truth, verifiability (in the Wikipedia sense) is put forward as a practical mechanism for attaining truth, particularly in light of the founder's objectivist belief that facts are independent of human minds and that the best way to collect them is by an examination of reliable sources.

3.2.4 Open

Wikipedia is open, first, in that almost anyone can contribute, and second, in that almost any subject matter can be included. Anyone with Internet access who is willing to learn the mechanisms of Wikipedia and abide by its policies can, at least potentially, add or edit Wikipedia articles[5]. This openness attracts the criticism that content can be generated by individuals who really do not know much about the topic, or who have a particular perspective on the topic that they are trying to advance. As such, much criticism of Wikipedia is directed to this so-called lack of expertise.

Most of the contributions to Wikipedia are anonymous. Contributors can register to obtain additional privileges, but registrants need not use their real names. As such, it is difficult if not impossible to ascertain the identity, and hence expertise, of an individual contributor to Wikipedia. Wikipedia explicitly recognizes this implication of anonymity, and states that "the

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[5] Although these individuals are commonly referred to as either "contributors" or "editors," there is no practical difference between the two designations. Anyone who contributes content can edit existing content and vice versa.

expertise or qualifications of the user are usually not considered" ("About Wikipedia," 2010, n.d.). Wikipedia does not rely on the subject expertise of its contributors to generate new subject matter, but instead requires that their contributions be derived from other sources. Wikipedia's openness ensures that these contributions can be easily challenged, and that corrections can be quickly and easily made. Even Larry Sanger, who's departure from Wikipedia was caused in part by its de-emphasis of expertise, acknowledges the effectiveness of this combination, noting that "the real shock came with the realization that Wikipedia's articles were good not in spite of its openness, but because of it" (2009, p. 53).

An example of the Wikipedia stance toward expertise is that of a prolific Wikipedia contributor registered as "Essjay," who claimed to be a professor with a doctorate in theology and who gained sufficient trust in the Wikipedia community to become a high level Wikipedia editor. In 2007 he revealed that he had no advanced degrees and was in fact a community college dropout (Shirky, 2008). Although this admission created considerable consternation both in the Wikipedia community and the larger circle of Wikipedia commentators and critics, it resulted in no formal changes to Wikipedia policy that requires its contributors to rely on derived expertise rather than to be experts themselves. However, it did affect Essjay's standing in the Wikipedia community, and he quickly lost his position of influence. This episode might be viewed as a failure of Wikipedia policy, but it might also be viewed as an example of the ability of the Wikipedia community to police itself within the framework of that policy.

Wikipedia is open to all content that is of larger interest, and is not just of interest to a small group of people. As a result there are no articles on subjects such as the "Jones family reunion" or "Max and Betty's cats over the years." Determining policies on exactly what should be included in and excluded from Wikipedia has resulted in an ongoing debate between "inclusionists," who argue that Wikipedia should include almost anything above a certain minimal standard of importance, and "deletionists," who argue for a higher level of "notability" (Callahan & Herring, 2011). This debate, however, is around a standard of inclusion that is still sufficiently open to allow for an extremely wide range of content.

Wikipedia's size and openness to content do not ensure universal coverage as Wikipedia is still a product of its contributor's interests. Although dated, Halavais & Lackaff's study (2008) found Wikipedia to be strong in some areas, including many of the sciences, but weaker in the humanities and social sciences. Coverage of the weaker areas might have improved over the intervening years. However, there is no evidence to suggest that Wikipedia's coverage is completely balanced across all subject areas or anything approaching universal in scope. As such, not finding a subject, or particular information about a subject in Wikipedia does not mean that the information or subject doesn`t exist. On the other hand, the size of Wikipedia does suggest that it includes subjects and information that might be difficult to find by other means.

3.2.5 Transparent

In addition to being open in terms of both contributors and content, Wikipedia is also transparent in regards to content edits and to its policies and practice. With respect to content, all changes to a Wikipedia articles are tracked on an associated "history" page, and an associated "talk page" provides space for discussions about, for example, contentious edits to an article. In many cases these discussions are much longer than the article itself, and anyone wanting to know more about an article's genesis can access these history and talk pages.

Wikipedia is also transparent with respect to its policies. The three content policies discussed above constitute the guiding principles for a large and evolving body of subsidiary policies and guidelines that, in turn, provides the framework for day to day Wikipedia practice. Reagle (2005) identifies three levels of Wikipedia policy. Policies themselves form the highest level, are most official, and are least likely to have exceptions. Guidelines at the next level are formed in accordance with policy and are actionable—that is, they are applicable to specific Wikipedia activities. Finally, there are a number of essays that, although non-authoritative, comment on and provide insights into Wikipedia and its processes.

Wikipedia has a governance process for making decisions regarding these policies and guidelines, as well as for addressing day-to-day problems and issues. One of the goals of the Wikipedia project is to build a community with members acting together in good faith. This goal

is reflected in Wikipedia governance, which is based on consensus rather than voting, and attempts to achieve mutually acceptable resolutions rather than decisions in favor of one side or the other. This process is managed by a hierarchy of editors and administrators that is largely determined by the community itself, with individuals who earn the respect of other members of the community given higher level privileges in the hierarchy.

3.2.6 Fluid

A Wikipedia article is always a work in progress, and there are no guarantees that a stable article will remain that way. The speed and ease with which content can be created, updated and changed makes Wikipedia very fluid. Articles are edited in real time, with changes showing up immediately. This fluidity is illustrated by the use of Wikipedia articles to track current events. These articles are created when a news story breaks, and are updated as the event progresses, or as new information about the event becomes available. This fluidity is not just a property of Wikipedia, but of web-based resources in general, and even more traditional information providers such as news sources demonstrate some degree of fluidity when they have a web presence. For example, articles in the online versions of many newspapers, including the *New York Times*, are updated as events progress. However, in these cases fluidity is not coupled with the sort of transparency Wikipedia exhibits with its history of article changes. In response, independent services such as *NewsDiffs* ("NewsDiffs," n.d.) have been established to track changes in news sources.

Although fluidity provides agility it can also lead to problems. There is no final, authoritative version of an article, and articles can be easily edited to detrimental effect. The more benign case occurs when someone with good intentions but less expertise than prior contributors waters down the content of an article by adding less accurate information or deleting higher quality content. The less benign case is outright vandalism, when someone goes about deliberately changing the content of an article with no intent to make the article better, but to put forward a particular point of view or to simply pull a prank. Wikipedia does have safeguards against this sort of behavior, beginning with the NPOV and verifiability policies. Changes that

appear to violate neutrality, or the deletion of cited content or the addition of uncited content can easily raise concern, and the archive function of Wikipedia makes it very easy to revert to a previous version of the article. But in order for this reversion to occur, the problem must be noticed and responded to appropriately.

This response can occur quickly, as Alexander Halavais, a professor at the State University of New York at Buffalo found out in 2004 when he intentionally vandalized several Wikipedia articles. He registered under an assumed name, and inserted thirteen errors (some obvious and easy to fact check, some not so) into various Wikipedia articles. To his surprise, within three hours all of the errors were discovered and corrected and a Wikipedia editor had tried to contact him through his user talk page (there are pages associated with registered contributors as well as articles) asking him to please refrain from this sort of behavior (Read, 2006).

Although the Halavais case received a certain amount of publicity, mainly due to Halavais himself reporting on his "experiment," perhaps the most famous case of Wikipedia vandalism involved John Seigenthaler, a veteran journalist who worked briefly for Robert Kennedy in the 1960s. In 2005 Seigenthaler discovered that the Wikipedia article about him had been edited to include false information stating that he had been complicit in the Kennedy assassinations. Seigenthaler is a significant enough figure to warrant a Wikipedia entry, but was not sufficiently significant for Wikipedia editors to monitor the content of his biography. As a result, the false material had been in the article for some months before it came to notice. Seigenthaler wrote about the incident in *USA Today* and the incident garnered considerable publicity. As a direct result of this case several policy changes were made. First, users connecting from an anonymous IP address were no longer allowed to create new Wikipedia articles. Second, a "Biography of Living Persons" policy was established dictating that information about living persons that is both controversial and unattributed or poorly attributed should be immediately removed. Finally, in addition to the already existing protection feature of Wikipedia, whereby a highly contentious article could be protected so that only administrators could edit it, a semi-protection feature was established to prevent unregistered or newly registered users from editing articles that are contentious but do not require the higher level of protection (Lih, 2009).

Although these cases garnered significant publicity, they are anecdotal and not necessarily representative of what occurs in Wikipedia overall. A more comprehensive study of Wikipedia vandalism was conducted by an IBM research group in 2003 (Viegas, Wattenberg, & Kushal, 2004) that ran a large scale statistical analysis of a section of Wikipedia. Their results showed that, overall, vandalism is frequent but is remedied very quickly. When the team focused on mass deletions, where at least 90% of an article was deleted, they found that over half were remedied within 3 minutes (p. 579).

Wikipedia has a multi-faceted approach to combating vandalism. Administratively, it has a Counter-Vandalism group that develops tools and procedures for detecting and correcting vandalism, and for dealing with vandals. ("Wikipedia: Counter-Vandalism Unit," n.d.). Examples of these tools include numerous "bots" and other automated programs that can be generally classified into two types. The first type includes rule-based programs that operate without human intervention. Some of these bots work through Wikipedia articles and perform basic editing tasks such as correcting grammar and capitalization. Others review all changes to Wikipedia as they are made, and automatically restore obvious and pre-definable instances of vandalism. As of 2009, these bots performed 16.33% of all edits (Greiger & Ribes, 2010, p. 119). Most instances of vandalism, however, are manually verified and corrected by Wikipedia administrators, and the second type of "bot" is designed to assist these editors rather than to make changes directly. For example, at the most basic level, an editor can sign up for "watch lists" and receive an alert when a change is made to any page on their watch list. Geiger & Ribes (2010) describe these "assisted editing tools" as "semi- and fully-automated tools [that] constitute an information infrastructure that makes possible the quick and seamless processes of valuation, negotiation, and administration between countless editors and issues" (p. 118). Many other tools and innovative approaches are being developed and tested and, if successful, put into production. For example, Potthast (2010) describes the use of Amazon's Mechanical Turk, an infrastructure that provides for large-scale

application of human review, to examine and, if necessary, repair potential instances of Wikipedia vandalism[6].

As a result, although Wikipedia is not immune to problems up to and including vandalism, these problems can be quickly rectified. This quickness to respond to vandalism is not just an isolated observation. Geiger & Ribes (2010) note that "scholarly and popular accounts of Wikipedia … often wonder at its near-immunity to vandals and spammers" (p. 117). As Lih (2009) puts it, "only in the digital realm is it easier to repair things than to do harm" (p. 6).

3.2.7 Quality

The issue of vandalism leads into the general issue of Wikipedia quality. This question can be addressed, first, internally, by looking at Wikipedia's actual quality control mechanisms, and second, externally, by looking at how it has been assessed by outside sources and studies.

Robust quality control processes, such as peer review for academic literature, are complex and demanding. Not only must processes be put in place so that the content can be examined by competent individuals and subsequently certified, but the individuals examining the content must be certified as competent to review the material. Wikipedia has nothing approaching this level of rigour, and developing and implementing a similar process for something as large and fluid as Wikipedia does not seem possible. However, Wikipedia does not ignore quality. The discussion of vandalism above looked at some of polices and tools that are in place to combat that particular problem. However, quality involves much more than just fighting vandalism. A bigger issue is the quality of the content that makes its way to Wikipedia in the first place. Wikipedia has

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[6] In addition to combating vandalism, bots are used for other editorial activities. For example, one of the earliest uses of bots for Wikipedia was the automatic addition in 2002 of the U.S. Census Bureau data for 3,000 counties and 33,832 cities to Wikipedia (Lih, 2009, p. 101). The data was added to existing articles when they were there, and new articles were created if none previously existed. Although controversial at the time, this use of bots has been accepted, and a special type of user account has been set up for bots so that their work can be easily identified.

developed a large body of policies regarding content, along with governance mechanisms to ensure compliance with those policies and safeguard mechanisms that engage when they are not. Many of these policies and mechanisms address quality control, and the available evidence would indicate that they are fairly comprehensively applied.

Stvilia, Twidale, Smith and Gasser, in their analysis of Wikipedia quality (2008), note that when Wikipedia initially started in 2003 there were only vague references to quality guidelines and assessment criteria in the policies. However, within three years a large number of formal criteria for quality assessment as well as a supporting infrastructure of quality control mechanisms and guides were developed. Stvilia et al. identified three types of quality control processes that are applied to Wikipedia: 1) those directed at evaluating article quality and responding with the appropriate edits; 2) those directed at the performance of Wikipedia editors, administrators, and the various scripts or "bots" used to monitor quality; and 3) those that create and maintain the apparatus within Wikipedia that both allows this work to be done and articulates the results—for example, discussion pages and edit histories. They also found that the Wikipedia community maintained a reputation mechanism outside of the more formalized processes whereby contributors, editors, and administrators gain or lose credibility within the Wikipedia community as a result of their past activities.

Although Wikipedia does not provide a single overarching internal evaluation matrix it does provide various mechanisms for either individual or coordinated evaluation of articles. This practice is consistent with Wikipedia's open nature where various functionalities are provided by the Wikipedia framework, but take-up and execution are left to interested contributors. In addition to the addition and editing of content, some examples of these mechanisms include identifying articles as stubs (short articles requiring expansion), adding to the discussion of an article, flagging articles identified as problematic, assessing the quality of articles as part of a WikiProject and, at the highest level, identifying "feature articles" that are considered to be exemplary by Wikipedia editors. A WikiProject ("Wikipedia: WikiProject Council," n.d.) is an administrative entity that is established to improve the quality of Wikipedia around a certain topic or related group of topics, and is used to facilitate collaboration amongst editors who focus on the articles addressing those

topics. Each project is coordinated by a Council, and acts to evaluate relevant Wikipedia articles, coordinate editing and monitoring of changes to these articles, and add new articles to Wikipedia. These projects work together to produce common policies and practices for their activities.

In addition to Wikipedia's internal quality control processes there is the matter of how this "quality" is judged outside the Wikipedia community. In other words, how credible is it? There are no studies that look at Wikipedia as a whole, nor do any such studies seem possible. First, Wikipedia's flexibility means that it is an ever changing target. Second, Wikipedia's size means that even if frozen at a particular point in time, any attempt to comprehensively access its quality against an external standard would be impractical if not impossible.

Although comprehensive studies might not be possible, a number of studies have examined the quality of subsections or components of Wikipedia. While these studies do not constitute a systematic analysis of Wikipedia as a whole, they do indicate that the quality of Wikipedia articles is generally high. Perhaps the most famous of these studies is the comparison of Wikipedia with Encylopedia Britannica ("Britannica attacks," 2006; Giles, 2005; Lih, 2004) in which Wikipedia articles were found to be on par with those in Britannica. Although the most famous, this is not an isolated example. Recent studies of health related Wikipedia articles also reflect positively on Wikipedia. Rajagopalan et al. (2011) compared Wikipedia articles on cancer with the Physician Data Query (PDQ), which is an online source of patient information maintained by the National Cancer Institute. They found that although the writing style of the relevant Wikipedia articles was not as clear as that of the PDQ, the two resources were similar with regards to accuracy, depth and treatment of controversial topics. They also found that Wikipedia had more references to external sources, and that a higher proportion of the Wikipedia references were to articles indexed in Medline, which is a comprehensive index of scholarly medical literature. Kupferberg (2011) found the basic information in Wikipedia on commonly prescribed drugs to be generally accurate, although incomplete in that it often lacked information on contraindications and drug interactions. Finally, Reavley et al. (2012) asked a panel of psychologists with clinical and research expertise in both depression and schizophrenia to compare relevant content from Wikipedia articles in those areas with that from 14 mental health related websites, Encyclopedia

Britannica, and a standard textbook in psychiatry. The content from these sources was edited to ensure that the sources could not be identified. The panel found the quality of information in Wikipedia to be generally higher than in any of these other sources, causing the authors of the study to conclude that "Wikipedia is an appropriate recommendation as an information source" (p. 1761).

On a more general level, Lucassen and Schraagen (2012) looked at how much trust individuals place in Wikipedia. Participant in their study were tested to determine their initial trust in Wikipedia, and then given two articles to evaluate, one that had previously been determined to be of high quality and one that had previously been determined to be of low quality. Articles in the high quality group had been rated as "feature articles" by Wikipedia editors, and those in the low quality group had been rated by those editors as "start class," the second lowest quality designator. Individuals who initially mistrusted Wikipedia tended to underrate the high quality articles, considering them to be of the same quality as the low quality articles, while those who initially trusted Wikipedia differentiated between the high and low quality articles, and did not overrate the low quality articles. As a result, the authors concluded that

> some evidence for potential undertrust in Wikipedia was found, as participants with low
> trust in this source disregarded the presented information, without considering its actual
> quality in their credibility evaluation. No evidence for potential overtrust was found, as
> participants with high trust in Wikipedia were still influenced by the quality of the
> presented information, rather than having blind faith in this source (p. 575).

The upshot of this study is that Wikipedia articles tend to be given less credibility then they deserve.

Another example is the study conducted by Chesney (2006), who asked a number of academics to review a Wikipedia article. Half of the participants (the experts) were asked to review a Wikipedia article in their area of expertise, and were thus able to make an expert evaluation of the content of those articles. The other half (the non-experts) were asked to review a random Wikipedia article from outside their area of expertise, and thus were not able to make an expert evaluation of the content of those articles. The assumption of the study was that the non-

expert evaluations would only consider the articles' look and feel, while the expert evaluations would also take into consideration the articles' content. On this basis, the expectation was that if the content was not solid, the expert evaluations would be lower than the non-expert evaluations, while the converse would hold if the content was solid. The result of the study was that the expert evaluations were higher than the non-expert evaluations, which suggested to the authors of the study that the accuracy of Wikipedia articles was reasonably high.

Although these studies are neither comprehensive nor conclusive, they do generally reflect well on Wikipedia. Kimmons (2011), in his overview of Wikipedia studies, found that "most attempts at studying Wikipedia have focused upon evaluating the quality of select Wikipedia articles, evaluating them as discrete knowledge products, and have generally yielded positive results" (Introduction, para. 3). Elvebakk (2008) concluded in her review of the research that

> taken together, this research seems to suggest that Wikipedia content is generally, if not universally, trustworthy, but that the quality of individual articles varies considerably. For better or for worse, Wikipedia does to a considerable extent mimic, or at least harmonize with, materials found in more traditional publications (Previous Research, para. 4).

Lucassen and Schraagen (2012), in their study of trust and Wikipedia, note that their "results suggest that the participants were more likely to have too little trust in Wikipedia than too much trust" (p. 566). Although these studies are not comprehensive, and hence cannot deliver the last word on Wikipedia quality, they do suggest that Wikipedia is not the "free for all" that it might first appear to be.

This section set out to determine a set of features that could characterize Wikipedia and distinguish it from other Internet resources. These features were determined with reference to Wikipedia's policies as well as its underlying technology and the particular affordances provided by that technology. The result of this analysis is a characterization of Wikipedia with reference to the following features: Neutral, Derivative, Verifiable, Open, Transparent, Fluid, and Quality.

3.3 Critical Thinking Criteria and Wikipedia

How should Wikipedia be analyzed as a source according to critical thinking criteria? Two different empirical methodologies for evaluating Wikipedia were noted in section 3.1. The first is to undertake a "brute force" empirical approach and attempt to conduct a comprehensive study of Wikipedia. The possibility of this approach is suggested by the study conducted by Viegas, Wattenberg, & Kushal (2004), which was the most comprehensive study found in the literature. When they conducted their analysis of the Wikipedia archive file from May, 2003 that file contained 130,596 articles, and a comprehensive study of that archive was only possible by employing large-scale statistical analysis techniques. Performing a similar analysis on a current archive of Wikipedia would require examination of over 4,000,000 articles. Another empirical methodology would be to analyze a representative sample of Wikipedia articles. This is the approach taken by the studies in the literature that made general claims about Wikipedia (e.g., "Britannica attacks," 2006; Chesney, 2006; Lucassen & Schraagen, 2012) or claims about Wikipedia articles in particular disciplines (e.g., Kupferberg, 2011; Rajagopalan et al., 2011; Reavley et al., 2012). However, neither of these empirical methodologies is compatible with the critical thinking approach. These empirical approaches arrive at conclusions about Wikipedia by examining the accuracy of individual Wikipedia claims rather than by application of critical thinking criteria for a source.

The case study method is an approach that could incorporate critical thinking elements. According to Thomas (2011),

> case studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides an analytical frame—an object—within which the study is conducted and which the case illuminates and explicates (p. 513).

Applying this methodology to Wikipedia would involve selecting a statement or set of statements to represent Wikipedia, and applying critical thinking criteria to those statements. However, Wikipedia's size, variety, and fluidity make it difficult if not impossible to select examples of

Wikipedia claims that could serve as representative instances for this sort of case study. Also, as with the empirical approaches, this approach would involve the examination of individual claims and not the application of critical thinking criteria for a source to Wikipedia itself.

Although critical thinking is directed to individual claims, it was determined in Section 2.3 that individuals could not be expected to have the necessary knowledge to directly evaluate most Wikipedia claims. Evaluation would have to proceed indirectly by evaluating the source of the claim, that is, Wikipedia itself. The following evaluation of Wikipedia will utilize the critical thinking criteria for a source, and will focus on Wikipedia's features, as determined by an analysis of its policies and practices in Section 3.2, rather than a set of examples. The question of how the critical thinking criteria for a source identified in Section 2.2 (expertise, stance, diligence, and reputation) apply to Wikipedia will be addressed by examining the application of those criteria to Wikipedia as characterized by its features rather than to Wikipedia as represented by a set of examples. Does Wikipedia as a source satisfy these criteria, and what do these criteria say about Wikipedia as a source? Questions regarding the extent to which the results of this evaluation can be applied to any particular article or claim in Wikipedia will be addressed later in this dissertation.

3.3.1 Expertise and the problem of type of expertise

The critical thinking criteria for evaluation of a source identified in the critical thinking textbooks were categorized and restated in Section 2.2. The first of these criteria, the "expertise" criterion, (The source should have relevant expertise to speak on the subject), refers to the subject expertise of the person making the claim. In the case of Wikipedia, the author or authors of an article are the contributors to the article, and it is difficult to determine the expertise of these contributors. Due to Wikipedia's openness anyone willing to abide by Wikipedia policy and practice can be a contributor, regardless of their subject expertise. Participation in Wikipedia is a matter of interest rather than expertise, and interest in a topic does not imply expertise in that topic. The fact that Wikipedia does not require subject expertise on behalf of its contributors does not mean that it dismisses expertise. Rather, expertise is handled in a particular manner. The

"Derivative" and "Verifiability" features of Wikipedia move the locus of expertise to the source documents and their authors. Although Wikipedia contributors need not be subject experts, expertise is incorporated derivatively from the authors of the source documents. Wikipedia claims require independent verification, and hence the expertise behind a Wikipedia article is not credentialed by Wikipedia or its contributors, but is deferred to a secondary examination of the cited sources. Thus subject expertise, although valued by Wikipedia, is not something that can be determined by direct analysis of a Wikipedia article. Should this deferral of expertise be accepted as of no consequence, or should it be accepted only on further investigation of the sources, or should it not be considered in the evaluation?

One possibility is that Wikipedia demonstrates inherent expertise that is different from the subject expertise that is normally thought of as "expertise." For example, Don Fallis (2008) examines the suggestion that Wikipedia's authority could derive from what has become popularly known as the "wisdom of crowds" (p. 1670). This phenomenon, explored in James Surowiecki's book of the same title (2005), is based on the observation that under certain circumstances groups of non-experts can make decisions that are comparable to, and in some cases better than, those of experts. However, this phenomenon is evident only under certain conditions—for example, when the group is sufficiently large and diverse, and when the issue is posed in a certain way (e.g., as a question requiring a single answer). These limitations make it unlikely that this sort of "wisdom" could underlie the diversity of content that constitutes Wikipedia.

Another type of expertise is advocated by Hartelius in her examination of Wikipedia and expertise (2010). She differentiates between two modes of expertise that she claims are in conflict. "I am here calling attention to two competing norm systems of expertise—network norms of dialogic collaboration and deferential norms of socially sanctioned professionalism" (p. 514). Hartelius frames the conflict in the jargon of power relations. "To Wikipedia, the corrective process of dialogue, not the oversight of a knowledge elite, assures content quality" (p. 517). Hartelius's ideas are taken up by Pfister (2011). He claims that Wikipedia embodies a networked participatory expertise where "information flows from multiple, often peripheral, nodal points toward a central, aggregating node" (p. 218). This networked expertise, he claims, challenges the

modern type of expertise that arose in the Enlightenment and focused on "professional training, accreditation, and academic peer review" (p. 218). Like Hartelius, Pfister frames his arguments in the jargon of power relations, and claims that although modern expertise was based on "command of subject matter … [and] simply based on access to and control of information" (p. 222), networked expertise is based on "procedural adroitness with information, and by expanding who contributes to subject matter expertise from the one to the many" (p. 222).

Although Pfister and Hartelius can be interpreted as providing accounts of how one type of expertise conflicts with and ultimately supplants the other, their work can also be used to inform another perspective that views the two types of expertise as complementary. According to this perspective, the "modern" subject expertise is still fundamental. Without the content generated by subject experts Wikipedia would have nothing to draw on, incorporate, and cite. However, Pfister's and Hartelius's analyses point out a second-order expertise that is claimed by Wikipedia, and required if Wikipedia is to reflect expertise in the sense set out by the critical thinking criteria. Wikipedia and its contributors must evidence expertise in selecting, summarizing, and citing the content created by the first-order experts.

Although there is a significant literature on expertise (e.g., Collins & Evans, 2007), and a detailed exploration of that literature is beyond the current task, it is important to point out the complexity of assigning expertise in Wikipedia, and the difficulties in evaluating Wikipedia in regards to expertise. However, the nature of Wikipedia, and the fact that fundamental, or subject expertise is deferred to cited sources, the contention here is that a secondary expertise is evidenced in the compiling and summarizing of these sources in Wikipedia.

The Expertise criterion calls for evaluation of the source's expertise, where the source is the person making the claim. In Wikipedia, the people making claims are the contributors to an article. The subject expertise (i.e., expertise in the subject matter of the content) of these contributors cannot be determined, in large part due to the anonymity of these contributors. Even if the contributors could be identified the No Original Research policy, which prohibits Wikipedia contributors from making original contributions to a subject, and the Verifiability policy, which requires all information in Wikipedia to be cited, effectively defer subject expertise from

Wikipedia itself to the cited sources. Wikipedia contributors do, however, exhibit a secondary expertise that is not subject expertise, but expertise in selecting, summarizing, and citing the content created by the first-order subject experts.

3.3.2 Stance and the problems of bias and objectivity

The "stance" criterion identified in the critical thinking textbooks and restated in Section 2.2 (The source should be unbiased, or not intend to deceive) captures notions around bias. A source should be free of self-deception, intent to deceive or mislead, and conflict of interest. Wikipedia's official stance is captured by its Neutral Point of View policy which serves to define Wikipedia's "Neutral" feature. This official stance permeates Wikipedia governance and practice, and is not just an abstract policy. The Wikipedia framework of software and policy includes checks and balances to ensure compliance with this stance on the part of authors and editors.

That said, there are questions around how neutrality is implemented in Wikipedia practice and whether the result is a lack of bias. Callahan and Herring (2011) look at one aspect of this issue, cultural bias. Their case study examines the English and Polish versions of Wikipedia, and asks "Are Wikipedia entries on famous persons different in English and Polish, and if so, how?" (p. 1899). They conclude that although there are differences in coverage, those differences are not attempts to mislead, but arise from the respective histories of the United States and Poland that naturally shape contributor's perspectives. They further conclude that although these differences might appear to constitute a violation of the NPOV policy, attempts to remove this sort of cultural "bias" would be counterproductive, and that the diverse perspectives from different cultures provides are important to Wikipedia.

Although this cultural bias might be rendered explicit by being attributable to the particular language version of Wikipedia, others claim that bias is more systematic and less capable of being made explicit. For example, Matei & Dobrescu (2011) argue that NPOV does not lead to objectivity, but that it promotes a systematic ambiguity in Wikipedia that allows for the co-existence of multiple perspectives. They argue that Wikipedia, rather than being neutral, is full of material from various conflicting perspectives. They further argue that Wikipedia is successful,

and that these conflicts remain for the most part latent because of the ambiguity of meaning that Wikipedia allows. As a result, they claim that NPOV is interpreted in various ways by Wikipedia contributors and appropriated to their ends. The tolerance of the resulting ambiguity makes NPOV "unenforceable in its spirit" (p. 49). However,

> one of the overarching conclusions of this essay is that the conflicts and ambiguity
> present at the level of interpreting Wikipedia rules are not extraneous, but central
> ingredients of this wiki project, which naturally develops from the pluralist and
> nonhierarchic nature of the medium and of the culture that brought it to life (p. 49).

It is unclear to what extent this conclusion constitutes a criticism of Wikipedia or simply a description. The whole point of NPOV is not to come up with a single perspective on a particular topic with holders of various conflicting perspectives in a state of harmony. Rather, the point is to ensure that these perspectives are represented and explicit. This balance between perspectives is a moving target, and it is to be expected that the application of NPOV, along with the notion of neutrality in Wikipedia itself, is in a constant state of negotiation.

Wikipedia's founder, Jimmy Wales, envisioned a sense of neutrality that would equate to a particular philosophical notion of objectivity. Wales's view was that Wikipedia would become a repository for collective knowledge, and that as this collective knowledge accumulates it would come to represent reality. Wales does not hold a constructionist theory of knowledge according to which knowledge is defined as whatever this collective repository would produce. Rather, he is a realist who believes that this repository would come to hold a correct representation of independent reality. It would thus be objective in the strong philosophical sense of achieving a "view from nowhere," to use Thomas Nagel's (1986) phrase. However, the fact that Wikipedia includes material from multiple perspectives means that Wikipedia is not objective in this sense. Further, it is unclear that objectivity in this sense is necessary in order for Wikipedia to maintain a neutral stance in the sense that characterizes Wikipedia policy and practice. Neutrality, in this latter sense, requires only that represented viewpoints be made explicit, and that contributors to try to cover, at least by reference, conflicting or potentially conflicting viewpoints.

The result is conflict between the prescription against bias posited by critical thinking's stance criterion and Wikipedia's Neutral Point of View policy. Instead of prohibiting bias, the neutrality espoused by this policy requires bias to be made explicit. The original goal of this policy, as set out by Wikipedia's founder, is a form of objectivity that is to result when the different points of view on a particular issue or topic are explicitly stated and can be compared. This concept of objectivity is based on a particular philosophy, and it is unclear (and something this dissertation will not explore) how close Wikipedia comes to achieving this goal. Whether Wikipedia can achieve this goal is not the measure of Wikipedia's current success. Rather, the crucial notion is the concept of neutrality that was to lead to this goal of objectivity, and neutrality in this sense underpins Wikipedia's central NPOV policy of stating all significant published views on a topic. This concept of neutrality, which involves bringing forward multiple perspectives and making the bias inherent in these perspectives explicit, aims at exposing bias rather than eliminating bias. However, it is only possible to strive for this type of neutrality in an environment where the complexities that result from the expression of these various and potentially divergent points of view can be accommodated. In a simpler environment such as a conversation the goal might be to lessen bias, or at least to make a particular perspective explicit, but it would not be possible to consistently strive for the sort of neutrality that consists of an overview of the various points of view. This can only be accommodated in a complex source such as Wikipedia, and the complexity of the source in turn makes evaluation of bias and neutrality a difficult matter.

3.3.3 Diligence and the problem of distributed applications

The "diligence" criterion identified in the critical thinking textbooks and restated in Section 2.2 (The source should exercise due care) captures notions around the care and attention expected from a source. An individual, as a source, should utilize good habits and adhere to established procedures in the preparation and delivery of information, have good reasons to support this information, and be accurate and careful. It would be expected that the attribution of diligence to Wikipedia would be made in a different manner from the attribution of diligence to an

individual. The initial examination of Wikipedia in Section 2.3 made this attribution by reference to functionalities such as Wikipedia's structure, policies, and editorial control, and it was determined that Wikipedia's functionalities give rise to expectations of diligence that cannot be attributed to many Internet resources.

Further analysis in this chapter shows that these functionalities are more varied, complex, and persistent across Wikipedia than the initial examination revealed. The framework in which these functionalities are situated is twofold, consisting of Wikipedia's policy framework and its underlying software. Wikipedia's policy framework is anchored by a small core of central policies and extended by mechanisms that provide a complex, comprehensive, and robust set of policies for Wikipedia practice. From a technical standpoint, Wikipedia is built on the Wiki software that was specifically developed to enable collaborative authorship. This software allows content to be easily added and modified using a web browser and a simple markup language. The Wiki software is adaptable, and provides the necessary flexibility for Wikipedia staff to add features required by the project, such as the associated "talk" and "discussion" pages. This core software is supplemented by other programs such as bots that either edit Wikipedia directly or assist individuals in the editing process. This software framework has proven to be reliable, stable, and adaptable. Together, these policies and software provide functionalities that give rise to both expectation of diligence on the part of Wikipedia participants, and mechanisms for exercising, reinforcing, and monitoring this diligence.

The functionalities provided by the policy and software framework provide the context for diligence, and the practice of the community within this framework is the measure by which diligence is ascertained. Some of the features identified in Section 3.2 are Wikipedia's openness, transparency, and fluidity. These features ensure that changes can be easily made to Wikipedia, but they also ensure that these changes can be tracked and monitored. The Wikipedia community has demonstrated persistence in policing additions and changes to Wikipedia content, and in constantly adjusting this policy and software framework in response to challenges that arise. However, the lack of a systematic approach to this monitoring and policing means that the consistency of Wikipedia content cannot be guaranteed.

Applying the diligence criterion to a complex source such as Wikipedia involves more than attempting to determine whether or not its contributors exhibit "good habits." The various functionalities of the source (policy, software) need to be taken into consideration in order to determine what "good habits" are in the Wikipedia environment, and it is not easy to determine either the level of compliance with these "good habits" or the level at which this compliance is monitored by the Wikipedia community. The upshot is that applying the diligence criteria to Wikipedia is not straight forward due to the complexity of Wikipedia and its environment.

3.3.4 Reputation and quality

The "reputation" criterion identified in the critical thinking textbooks and restated in Section 2.2 (The source should have a good reputation) captures notions around the reputation and reliability of the source. Wikipedia's reputation was initially found to be mixed, with recommendations ranged from "use cautiously" to "avoid." Wikipedia itself promotes the cautious end of the spectrum, indicating that it should not be used as a primary source ("Wikipedia: Researching with Wikipedia," n.d.). However, as noted in the discussion of quality above, more recent evaluations of Wikipedia, including those of medical information on the Internet (Rajagopalan [et al], 2011; Kupferberg, 2011; Reavley [et al], 2012) found that Wikipedia is generally accurate, and in many cases more so than accredited web resources or other publications.

This discrepancy between Wikipedia's reputation and actual evaluations of Wikipedia leads into questions regarding quality and reputation. It is quite possible for a high quality item or resource to garner a bad reputation for reasons that have nothing to do with their quality. A recent example from outside the Wikipedia environment that illustrates this issue is Toyota's problem with complaints about electronic failures causing unintended acceleration and resulting in accidents. This problem was investigated by independent authorities, and it was determined that although other design features and, most significantly, driver error might have come into play, the electrical system itself was not at fault (Wald, 2011). Nonetheless, the adverse publicity and resultant fallout dealt a severe blow to Toyota's reputation, and resulted in significant financial

loss for the company. This example shows that reputation and quality are not equivalent. Rather, reputation reflects a perception of quality and is not a direct reflection of quality itself. In the case of Wikipedia, the common perception is that Wikipedia is of low quality. However, studies tend to show that it is of higher quality than that reputation would suggest. Although there are fundamental questions about Wikipedia's quality, these are not necessarily the same questions that are reflected by its reputation.

As a result, when applying the critical thinking criterion of reputation, care should be taken to ensure that the source's reputation reflects its quality. This potential confusion between reputation and quality can make resources such as Wikipedia difficult to evaluate. Further, even if reputation was a reliable indicator of quality it would be difficult to apply to statements from a complex source such as Wikipedia. The reputation garnered by parts of the source might not accurately reflect the quality of the source as a whole, and the reputation of the source as a whole might not accurately reflect the quality of any particular statement from that source.

3.3.5 Problems with Criteria Application

The discussion in the preceding sections examined Wikipedia as characterized by features identified in Section 3.2 in light of the critical thinking criteria as set out in Section 2.2. The "neutral" feature informs the stance criteria, the "derivative" and "verifiable" features inform the expertise criteria, and the "quality" feature informs the reputation criterion. The diligence criterion is informed by a number of these features, including "openness," "transparency," and "fluidity," as well as by the underlying policy and software framework that define Wikipedia and provide for its existence. However, a number of problems arose when attempting to apply these criteria to Wikipedia. With expertise, issues arose around anonymity, deferred expertise, and secondary expertise. With stance, issues arose around bias, neutrality, different concepts of objectivity, and multiple points of view. With diligence, issues arose out of determining what "habits" should characterize diligence, and the consistency of the Wikipedia community's behavior with respect to those habits. Finally, questions arose regarding the correlation between reputation and quality. Although some of these issues are specific to Wikipedia, they also point to

underlying issues around the complexity of Wikipedia as a source, and the differences between a complex source and a simple source such as an individual. The critical thinking criteria were formulated for application to an easily identifiable source such as a person, and applying these criteria to a complex source results is problematic.

Wikipedia is, in the first instance, a composite source. Although Wikipedia's complexity is partly attributable to its composite nature, this complexity is also a product of the Wikipedia environment. Unlike many other resources, including most traditional encyclopaedias, there is no standard procedure for adding and editing content, vetting content and contributors, or evaluating quality. Although there is a general framework within which these functions proceed, that framework is malleable and application of these functions is distributed. The resulting complexity makes Wikipedia both unstable, in the sense that content can be changed quickly, and uneven, in the sense that there is no overall consistency to those changes. With a traditional encyclopedia, for example, consistent compliance with standard procedures mean that a measure of the quality of any particular portion of the product is directly derivative from the overall standards and quality of the product itself. This sort of derivability is not possible in the case of Wikipedia. Although one can get an overall sense of the processes used to put Wikipedia together, and thus an overall sense of the quality of Wikipedia as a whole, this perception of quality cannot be used to evaluate specific portions of the product. Rather, each portion is the result of the combined efforts of a certain segment of the Wikipedia community, and the actions of different segments garner different results. As a result, Wikipedia's complexity derives not only from its composite nature, but from a certain amount of internal inconsistency.

Although Wikipedia's internal inconsistency is one of its faults, the fact that it allows this inconsistency is one of its strengths. When examined with respect to expertise (Section 3.3.1), it was found that Wikipedia exhibits a secondary expertise that involves compiling and summarizing information from other sources, and that primary, or subject expertise, is deferred to these sources. This gives scope to represent existing primary expertise as it is presented in the source literature and, as a result, Wikipedia reflects the inconsistency of primary subject expertise in those sources. When examined with respect to stance (Section 3.3.2), Wikipedia's neutral point of View policy

advocates expressing and exposing bias rather than eliminating it. As a result, Wikipedia is inconsistent with respect to point of view, and does not aspire to be objective in the more traditional philosophical sense. However, this inconsistency allows it to be representative and inclusive of the points of view and biases in the source literature

When examined with respect to diligence (Section 3.3.3), Wikipedia development occurs in a robust policy and technological framework. However, development and monitoring of Wikipedia content within this framework is inconsistent and depends on the interests of the Wikipedia community. On the minus side, this inconsistency reflects the attention that this community pays to some sections of Wikipedia, and the neglect that other sections receive. On the plus side, the fact that Wikipedia does not force consistency means that it can reflect the inconsistency of content and interests of individuals outside of the Wikipedia community. Finally, reviews of Wikipedia often note its inconsistency, and this inconsistency is reflected in its reputation (Section 3.3.4). On the other hand, judgements regarding Wikipedia are often made on the basis of particular Wikipedia examples or surveys of particular subject matter in Wikipedia, and Wikipedia's internal inconsistencies mean that these judgements, and the reputation that follows, are not always representative of other portions of Wikipedia.

Wikipedia thus displays a complexity that makes it quite different from the environment to which critical thinking, as espoused in the critical thinking textbooks, is directed. Part of this complexity is due to the composite nature of Wikipedia as source, and part of this complexity is due to the Wikipedia environment, and the particular uncertainties in that environment that allow individual members of the Wikipedia community to act in very different ways within a general framework. As a result, an overall assessment of Wikipedia as a source cannot be assumed to hold for any particular section of or specific claim in Wikipedia. That said, Wikipedia's openness assures that there is no attempt to hide or gloss over its inconsistencies. As such, direct comparisons with other resources that claim a much higher level of consistency but are less transparent regarding the potential for lapses have the potential to be misleading.

3.4 Chapter Summary

The context for this chapter was established in Chapter 2, where it was determined that a critical thinking assessment of a statement in a source such as Wikipedia could not be accomplished by direct evaluation of the statement itself. Rather, evaluation needs to be indirect, and derive from an evaluation of the statement's source. A number of critical thinking criteria for evaluation of a source were identified in a selection of critical thinking textbooks and restated, and this chapter has explored how these criteria could be applied to Wikipedia as a source.

This chapter began with an overview of Wikipedia, and set out a number of features that characterize Wikipedia. The criteria for evaluation of a source were then applied to Wikipedia as so characterized, and a number of problems were discovered that made a straight-forward evaluation of Wikipedia according to these criteria problematic. While many of these problems are specific to particular features of Wikipedia, an underlying issue is Wikipedia's complexity. The critical thinking criteria were initially established in the context of a conversation between an individual and another person, and while not intended to be limited to this context, are phrased for application to a single homogenous source. In order to apply critical thinking criteria to Wikipedia the underlying issue of how to approach complex sources needs to be addressed, and it needs to be seen if this resolves the specific problems identified with respect to each of the critical thinking criteria.

In Section 2.5 questions with these critical thinking criteria were posed on both the practical and theoretical level. On the practical level, the problem is to ensure that critical thinking criteria sufficient for application to a source like Wikipedia are identified for the critical thinker, and that sufficient guidance in the use of these criteria is supplied so that these criteria can be properly applied. This chapter identified a number of problems with the application of the initially identified criteria as restated in Section 2.2, and in so doing has demonstrated that these criteria are either not sufficient or that the guidance required for their application still needs to be sought. Further, this chapter has identified the complexity of Wikipedia as a source as an issue underlying many if not all of the problems encountered. In more general terms, how should a single claim from a complex and inconsistent source be evaluated?

Chapter 2 noted that the theory of critical thinking should provide grounding for critical thinking practice. This theory should provide for guidance in the application of the existing criteria, and if the criteria prove inadequate even with this guidance, for the selection of additional or replacement criteria. The theoretical problem identified in Section 2.5 is that the theory of critical thinking, and in particular, Siegel's epistemology of critical thinking, does not provide the necessary grounding for the practice of critical thinking. This chapter further emphasizes the need for this grounding.

The remaining chapters will explore how the literature on testimony can be used to develop a testimony-based theory of critical thinking that at least partially fills the identified gap between Siegel's epistemology of critical thinking and critical thinking practice. Two questions need to be addressed in order for this investigation to be successful in terms of critical thinking. The first is the theoretical question of whether testimony can at least partially fill the gap between Siegel's epistemology and critical thinking practice, and provide the grounding necessary for the selection of critical thinking criteria applicable to complex sources such as Wikipedia. The second is the practical question of ensuring that critical thinking criteria appropriate for application to a source like Wikipedia are identified for the critical thinker, and that sufficient guidance in the use of these criteria is supplied so that these criteria can be properly applied.

The next step, in Chapter 4, will be a review of the current literature on testimony. Chapter 5 will investigate the implications of considering Wikipedia an instance of testimony, and Wikipedia testimony will be compared to the standard case of testimony that is the object of most of the discussions in the literature. Chapter 6 will return to the literature of testimony reviewed in Chapter 4, identify aspects of that literature that are potentially applicable to critical thinking, and take initial steps in developing a testimony-based theory of critical thinking. Chapter 7 and the following chapters will further develop this theoretical apparatus, and work out both theoretical and practical implications of applying the literature of testimony to critical thinking.

4. TESTIMONY

Section 2.4 identified a gap in the literature of the philosophy of education between the theoretical grounding for the critical thinking project provided by Siegel's philosophy of critical thinking, and theoretical grounding for the criteria that are proposed in the context of this project. The epistemological nature of Siegel's theory suggests that foundational theories to bridge this gap might be found in the philosophical study of epistemology. Further, the epistemology of testimony was identified as an area of epistemology with similar concerns to the area of critical thinking that is of particular interest in this dissertation, namely, how to evaluate statements received from sources. As such, the epistemology of testimony shows promise as a potential source for theories that might help bridge the identified gap in critical thinking theory.

This chapter will begin with a general introduction to the epistemology of testimony, and go on to survey the philosophical literature on testimony in the context of the theoretical approaches that frame much of that debate. The intent of this chapter is to give a general idea of the main areas of concern in the epistemology of testimony, and the main approaches that philosophers take to the subject. Not all of these concerns and approaches will prove relevant to critical thinking, and determination of which are relevant will be made in Chapter 5. The purpose here is not to settle any of the debates in that literature, but to explore how testimony might be applied to critical thinking and to critical thinking criteria specifically.

4.1 Testimony, Critical Thinking and Wikipedia

Before turning attention to the philosophical literature on testimony, it will be useful to ask why this literature might have the potential to provide theoretical foundations for critical thinking criteria and for application of these criteria to Wikipedia. The particular issue at hand with respect to critical thinking is the gap between Siegel's theoretical support for the project of critical thinking and the practice of critical thinking, in particular, the lack of theoretical foundations for the selection and application of critical thinking criteria for sources such as Wikipedia. Siegel's theory of critical thinking suggests that these theoretical foundations might be found in the philosophical study of epistemology. As noted in Section 2.4, Siegel construes

critical thinking in terms of good reasons. A critical thinker will judge a statement with respect to the good reasons that the critical thinker has in favor of either accepting or rejecting that statement. Siegel construes good reasons in epistemic terms. In his words, "the normative force of reasons is determined wholly by their epistemic quality" (2005a, p. 545). Siegel's theory of critical thinking, which forms the context for this investigation, thus point towards epistemology as a possible source for the theoretical foundations being sought here.

Although "epistemology" is often used interchangeably with "theory of knowledge," epistemology is not the only area of philosophy that deals with knowledge. However, epistemology looks at knowledge from the perspective of an individual, and asks questions such as what it means for an individual to know something, and how an individual can be justified in holding something as knowledge. Areas of philosophy beginning with "philosophy of ..." look at knowledge in that area "writ large," and take a higher-level perspective of knowledge in the particular area. For example, the philosophy of science addresses questions such as what constitutes legitimate scientific knowledge and how that scientific knowledge is produced. But regardless of how scientific knowledge is viewed from this perspective, epistemological concerns arise when an individual is presented with a scientific claim. How is that individual justified in accepting the claim as knowledge? This concern with the individual's perspective makes epistemology's perspective on knowledge particularly relevant to theoretical issues in critical thinking.

The study of testimony in the field of epistemology looks at the issue of statements that an individual receives in some manner from another individual. Testimony thus addresses the same general problem as the area of critical thinking under consideration here—specifically, the evaluation of knowledge claims from sources. Although the issue of testimony has been addressed periodically throughout the Western philosophical tradition, the publication of Coady's *Testimony* in 1992 initiated a resurgence of interest in the topic. Given that a considerable body of recent literature has been published on the philosophy of testimony, and that testimony and the issue of critical thinking criteria for sources addresses the same general question, it is reasonable to look to this philosophical literature on testimony as a possible source of theory applicable to the

theoretical gap identified in the critical thinking literature. In general terms, a recipient acquires

knowledge through testimony when that recipient comes to believe the statement on the basis of

the provider's say-so. As such, a preliminary working definition of testimony can be proposed as

follows:

Testimony consists of a statement obtained by a recipient from a provider.

In the philosophical tradition, the sources of knowledge considered to be available to an

individual are those directly accessible by the individual: introspection, perception and memory,

collectively generating what Sellars (1979) calls IPM (Introspection, Perception, Memory)

knowledge[7]. By referring to these sources an individual can, at least in theory, provide

justification for knowledge so obtained. It might be asked whether or not some type of IPM

knowledge could be put forward as foundational for critical thinking criteria for sources.

Justification of a statement by citing IPM knowledge requires the individual to have direct access

to the state of affairs that the statement describes. For example, in order to justify a statement

utilizing perception the individual must directly perceive what the statement describes (e.g., "I see

a green table before me" supports the statement "This table is green"). However, if the only

support an individual has for the statement "The table is green" is from another person saying that

the table is green, the individual does not have direct support for the statement from one of the

IPM sources of knowledge. The individual is relying on the provider of the statement or some

other individual to have that direct support, and is thus relying on another person's say-so, or

testimony, that this is the case.

How should testimonial knowledge be treated? Although answers to this question vary,

there is general agreement that testimonial knowledge is legitimate. Restricting legitimacy to IPM

knowledge would leave the general store of knowledge severely depleted, as much of what we

consider to be knowledge, from our birthdates to news reports, is obtained through testimony. The

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[7] "Inference," or "reason," is sometimes added to these basic sources of knowledge (e.g., Sosa, 1994, p. 62).

question is not *whether* any testimonial knowledge should be accepted, but *what* testimonial

knowledge should be accepted, and what should be believed on the basis of testimony. This is a

similar situation to that encountered by a critical thinker when statements from sources such as

Wikipedia are being evaluated. It was argued in Section 2.3 that when evaluating claims from

sources such as Wikipedia, criteria to evaluate the source of a claim should be used rather than

criteria that pertain to the claim itself. Although the individual might be able to directly evaluate

the statement in some cases, these cases will be the exception rather than the rule, and in most

cases the critical thinker will need to evaluate the source of the statement. To rely on IPM

knowledge exclusively in the critical thinking context would be to insist that these statements from

a source be directly evaluated.

The question of exactly what testimony is remains contentious in the philosophical

literature. The working definition proposed above simply states that "testimony consists of a

statement obtained by a recipient from a provider." Providing a more nuanced definition of

testimony brings in assumptions about philosophical issues related to testimony that others might

quibble with. For example, Coady (1998) notes that he has "used 'testimony' as a broad term for

certain sorts of telling, but it is an interesting and difficult task to give a serviceable definition of

what these sorts are" (Further Issues, para. 3). Although providing a canonical definition of

testimony is a contentious issue, there is some commonality in the approaches taken to testimony

in the literature. First off, philosophers characterize testimony in both a broad and a narrow sense.

When looked at broadly, a distinction is commonly made between formal testimony and natural

testimony (e.g., Coady, 1992, Lackey, 2008). Formal testimony is that offered in formal settings

with a certain amount of structure, the classic example being courtroom testimony. Natural

testimony, by contrast, is that encountered on an everyday basis. Epistemologists focus on natural

testimony, considering it to be a better complement to IPM sources of knowledge than formal

testimony. When looked at narrowly, the focus is to remove complications to make testimony

more easily subject to philosophical analysis. A common move is to define testimony in terms of

a particular type of speech act. For example, Adler (2006) defines testimony as "the assertion of a

declarative sentence by a speaker to a hearer or to an audience" (p. 2) and goes on to cite a number

of authors who hold variants of that definition (Coady, 1992; E. Fricker, 1995, 2004; Graham, 1997; Goldberg, 2001). As a result, much of the literature on testimony focuses on what will be called here the standard case: person to person testimony involving a short assertion, a sentence or so in length, made in speech from one individual to another. The standard case of testimony, then, consists of a statement obtained by a hearer from a speaker. A preliminary working definition of this standard case can be set out as follows:

Standard case testimony consists of a statement obtained by a hearer from a speaker.

Despite this focus on the standard case, the implications of most of the ensuing discussions are not limited to this case. Unless there is a particular reason to retain the speaker / hearer vocabulary, the terms "provider" and "recipient" will be used to avoid implications that the theory of testimony is restricted to the standard case, and not to prejudice the expansion of the notion of testimony beyond the case of a speech utterance.

Although the literature on testimony focuses on the standard case it does discuss other types of testimony as well. In particular, there are a number of references to non-conversational testimony, which, following Coady (1992), will be referred to by the term "documentary testimony." Much of the knowledge an individual acquires through testimony is not obtained by direct interaction with other individuals, but through the encounters with documents of one type or another. The term "document" need not be restricted to a particular type of document (for example, documents printed on paper) but can extend to documents in other formats as well (for example, Internet sites such as Wikipedia). Coady (1992) notes that in some cases of documentary testimony "we are not really very far from what we have been treating as paradigm testifying since the only difference lies in the original speaker's or writer's ignorance that he will be testifying to us" (p. 50). He does not go on to discuss in any detail documentary testimony that differs significantly from the standard case, although he does discuss the particular case of "historical testimony" and the problems historians have determining how historical documents are credentialed and when they can be relied on as sources of information (p. 221).

A number of other writers use different terms to refer to testimony that uses documents. Audi (2004) distinguishes what he calls primary testimony, or "the normal testimony in question," from secondary testimony, or "testimony in publications and reported by others" (p. 23). However, he only makes this distinction so that he can put aside secondary testimony and focus on the standard case with its restriction to primary testimony. Pritchard (2004) provides another reference to documents when he talks of "the paradigm case of testimony—the intentional transfer of a belief from one agent to another, whether in the usual way via a verbal assertion made from one agent to another, or by some other means" (p. 326). Although he differs from most other authors by including this limited type of non-verbal communication in the sort of testimony he is examining, he does so only because he does not consider that its inclusion brings additional issues of epistemic significance to the table. Lackey (2006), on the other hand, does not distinguish documentary testimony from the standard case. For example, she refers to documents such as British newspapers, magazines such as National Geographic and the National Enquirer, and Internet websites as examples in her general discussion of testimony.

Wikipedia can be viewed as a form of documentary testimony and some writers, for example, Fallis (2009) and Tollefsen (2009), mention Wikipedia as an instance of testimony. Neither goes into detail—Fallis discusses Wikipedia testimony briefly and in general terms, and Tollefsen looks at Wikipedia as an instance of her concept of "group testimony" that is discussed further in Section 4.3.2. As such, although the philosophical literature does not provide a detailed analysis of Wikipedia as testimony, there is precedent in that literature for considering Wikipedia to be an instance of documentary testimony. One of the tasks of this dissertation (taken up in Section 5.2) will be to provide this more detailed analysis, and show how discussions of testimony that focus on the standard case can be applied to Wikipedia.

With this brief background in place, attention can now be turned to the philosophical literature on testimony.

4.2 Evidential Accounts of Testimony—Reductionism and Anti-reductionism

John arrives in New York at Grand Central Station for the first time. He asks a stranger where the Empire State Building is. The person answers "Go south seven blocks, turn right, and you'll see it." When asked later why he accepted those directions, John answers "because someone told me that it was seven blocks south and to the right from Grand Central Station." The source of what John took as knowledge was the say-so, or testimony, of this other individual, and he justifies his new belief by appealing to that testimony. At question is whether John should have accepted these directions on that basis. There are, of course, practical considerations that make John's acceptance of this particular piece of testimony seem more innocuous than if, say, he had asked the same person if he (John) looked healthy and, based on that reply, decided whether or not to begin treatment for a serious illness. Aside from the particular circumstances of this example, the general question is: To what extent, if at all, is a person's belief justified on the basis of testimony being the source of that belief? More formally, is recipient R justified in holding statement p by virtue of being told that p by a source S?

The philosophical literature of testimony is framed in both historical and contemporary debate by this question (Green, n.d.; Pritchard, 2004), the answers to which have been cast as either "reductionist" or "anti-reductionist" (sometimes called "non-reductionist"). Reductionists claim that testimony cannot provide justification, and that knowledge obtained through testimony needs to be justified by appeal to another source of knowledge. Put another way, testimonial justification "reduces" to other, more basic types of justification. The sources most commonly posited to provide this justification are introspection, perception, and memory, the aforementioned IPM knowledge. Anti-reductionists claim that, at least in certain circumstances, knowledge obtained through testimony can be justified by appealing to the fact that the knowledge was obtained through testimony, and that appeal to other sources of knowledge is not necessary. In other words, testimony is a basic source of justification. Those who argue for anti-reductionism can be seen as promoting gullibility, as testimony is often found to be faulty, whereas those who argue for reductionism can be seen as promoting skepticism, as individuals have neither the time

nor the resources to independently justify all the beliefs acquired through testimony (Goldberg & Henderson, 2006).

4.2.1 Reductionism

Historically, both global and local versions of reductionism have been advocated. Global reductionism addresses the enterprise of testimony as a type, whereas local reductionism addresses individual instances of testimony. Global reductionism holds that individuals can accept testimony if they possess justification from non-testimonial sources that testimony is, in general, justified. Although this position is attributed to Hume (1748/1962) and a contemporary version is advocated by Michaelian (2008), global reductionist theories of testimony are rare. The argument against global reductionism is that no individual has enough non-testimonial knowledge to support the contention that testimony is generally acceptable. Applied to the example above, a global reductionist would hold that John's acceptance of the provided directions can be justified if John has found, in the past, that beliefs he has formed on the basis of testimony have turned out to be largely correct, and that, therefore, testimony in general is a reliable source of knowledge. The argument against this global reductionist claim is that John's prior experience with testimony, no matter how extensive, is still very small compared with the total amount of testimony produced, and thus insufficient to serve as a basis for the overall reliability of testimony. The reductionist / anti-reductionist debate thus focuses on local reductionism, which addresses individual instances of testimony. The local reductionist claim is that justification for each particular instance of testimony must be provided by appeal to a more basic source of justification. Applied to the example above, the local reductionist would hold that John must appeal to sources other than the provided testimony for justification of that testimony.

The first reductionist account of testimony found in modern Western philosophy (i.e., Cartesian and Post-Cartesian philosophy) is generally acknowledged to be that of Hume (1748/1962). Although Hume admits that testimony is extremely useful and necessary, he considers it to be acceptable only insofar as it receives independent support. The generally considered view is that Hume is a global reductionist (Kush & Lipton, 2002), holding that

testimony can be considered reliable based on inductive reasoning from our past experience with it, and, as such, we do not need evidence for every fact that comes to us via testimony. This characterization of Hume's view on testimony has been criticized. According to these critiques, this characterization is based on a limited reading of his texts, with the result that his accounts of belief formation and justification are collapsed. However, these critiques do not agree on exactly what view of testimony Hume is supposed to have held. For example, Welbourne (2002) claims that Hume had no real theory of testimony let alone a reductionist theory. Traiger (2010) and Wilson (2010) both hold that a full account of Hume's theory of ideas suggests some sort of a non-reductionist, social account of testimony, although they differ as to exactly what that account should entail. Finally, Wright (2011) holds that some of Hume's writings suggest that individuals use their understanding of other individuals and of human nature in general to justify testimony received from these individuals. While the reductionist account of testimonial justification standardly attributed to Hume requires recipients to justify testimony via inductive inference from those recipients' own experience, these writers claim that Hume brings in social factors of various types to testimonial justification, and that the strict, individual-centric, inferential account of testimonial justification normally attributed to him is inaccurate. But whatever the correct interpretation of Hume might be, the global reductionist view attributed to him has served as a reference point and foil for the contemporary debate.

Local reductionists make two types of appeal to non-testimonial sources of justification. The first is to seek direct justification of the claim. Applied to the example above, John would be properly justified in accepting the directions given to him only by verifying himself that they are correct—that is, by proceeding seven blocks south, turning right, and actually seeing the Empire State Building. He would then be appealing to perception as a source of justification. The second type of appeal is to seek indirect justification of the claim. Indirect justification is usually obtained through consideration of the testimony's provider. Applied to the example above, the person providing the testimony might appear trustworthy to John—she might speak confidently, an indication that she is sure of what she is talking about, and make direct eye contact, leading John to believe that she is not trying to mislead him. Or she might be wearing a police uniform,

and John's prior belief that police officers are generally trustworthy would lead him to believe that this particular person is trustworthy.

Contemporary philosophers who hold reductionist views, or views that are at least partly reductionist, include Mackie (1970), Adler (1994, 2002), E. Fricker (1987, 1994, 1995, 2006), Faulkner (2000, 2002), Lackey (2008), Lyons (1997), Lipton (1998), Shogenji (2006), and Van Cleve (2006). E. Fricker is the most widely referenced of those cited. She does not hold the recipient of the testimony responsible for directly justifying testimony; rather, the burden of direct justification resides with the provider of the testimony. However, the recipient must be able to indirectly justify acceptance of the testimony, and does so by constantly monitoring the provider's credibility. For Fricker, this monitoring is a background process that puts the recipient in the position of being able to provide explicit reasons to accept what the provider is offering. Those reasons have to do with the credibility of the provider, that is, indications that the provider is sincere and competent, and can be relied on to provide direct justification if required. An epistemic link results—a state of affairs holds, the provider of the testimony has knowledge of this state of affairs and is justified in formulating and communicating statements about this state of affairs, and the recipient is justified in accepting these statements based on that recipient's assessment of the provider. Fricker's account is thus reductionist, in that testimonial justification is "reduced" to justification by another source of knowledge, and is an indirect reductionist account in that the recipient's justification of the received testimony involves justification of the testimony provider's reliability rather than a direct appeal to IPM knowledge held by the recipient.

Coady (1992) advances an account of testimonial justification that is similar to Fricker's. He argues, first, that information from various sources (perception, memory, inference, and testimony) is integrated in the belief formation process, and that this "cohesion" speaks to the reliability of the resultant belief. He also argues that an integration of the beliefs themselves, which he calls "coherence," adds to this justification. However, Coady considers his account to be a form of anti-reductionism whereas Fricker considers her similar account to be a form of reductionism. Although Coady does not take issue with Fricker's characterization of her account of testimony as reductionist, a number of other writers do. Gelfert (2009) claims that in order for

local reductionism to succeed, justification of testimonial claims must appeal to some non-testimonial source of knowledge, and that Fricker's account makes no such appeal and is hence anti-reductionist in nature. Goldberg and Henderson (2006) also argue that Fricker's monitoring is anti-reductionist, and hold that such monitoring is consistent with the recipient having a "default epistemic entitlement" to believe testimony. This monitoring, they claim, does nothing more than acknowledge that this entitlement is defeasible.

Direct reductionism is seldom proposed in contemporary debates. Adler (2002, 2006, 2007) provides an exception in espousing what he terms "evidentialism," which holds that beliefs must be supported by evidence. His "Default Rule" states that under normal conditions it is proper to accept testimony provided that the recipient has no special reason to object to it. However, this rule does not entail justification; rather, it is an easily defeatable norm that merely provides an initial entitlement to accept. When it comes to justification, Adler claims that problems are caused by focusing on the foreground of the testimonial exchange where the recipient must rely on the provider without, in many cases, having much knowledge about that provider. Adler's claim is that the recipient has a background that provides the critical apparatus necessary for evaluating testimony. The recipient evaluates testimony according to its coherence with that background, and this background thus provides the evidence and grounds to sustain justification of the testimony. Although testimony provides the origin for belief, in most cases it does not sustain its justification. Adler (2006) claims that his Default Rule is compatible with Fricker's account and that, if the monitoring she requires is a background monitoring that does not require special efforts on the part of the recipient, differences between her position and the Default Rule disappear. However, as opposed to Fricker, Adler requires justification to be provided by the recipient of the testimony in the form of evidence available to that recipient. If the recipient's acceptance of the testimony is challenged, it is up to the recipient, not the provider, to provide direct evidence for that which the testimony is about.

4.2.2 Anti-reductionism

Anti-reductionist accounts of testimony hold that testimony should be accepted without recourse to any other form of justification as long as there are no reasons at hand to reject that testimony (so-called "defeaters"). This process parallels our acceptance of knowledge acquired through perception. We form beliefs based on what we perceive, and can justify those beliefs by appeal to the fact that, under normal circumstances (i.e., under circumstances where there was no evidence to the contrary) perception is reliable. Returning to the example above, John's belief that the Empire State Building is on 34th Street would be justified based on perception if he goes and sees it. Similarly, an anti-reductionist would claim that John is justified in believing the directions he received as long as he held no negative evidence suggesting that this testimony was unreliable. For the anti-reductionist, positive evidence in addition to the testimony itself is not required for justification. Anti-reductionists do not hold testimonial knowledge to be infallible—testimonial knowledge can easily be discredited or found false. On the other hand, fallibility is characteristic of most if not all types of knowledge. Knowledge obtained through, for example, perception can also be later found to be erroneous. What anti-reductionists do claim is that testimony itself provides justification and not, as Adler claims, simply a non-justificatory initial entitlement indicating that one should proceed with the justificatory process rather than reject the testimony outright.

The first modern anti-reductionist account of testimony is generally credited to Hume's contemporary, Thomas Reid (1764/1967). Reid holds that testimony, like any other source of knowledge, is fallible. However, humans are designed to, for the most part, present accurate testimony (Reid's "Principle of Veracity"), and to believe what others tell us (Reid's "Principle of Credulity"). Reid bases his Principle of Veracity on language use—we have, he claims, a propensity to speak the truth. He bases his Principle of Credulity on the claim that credulity is a God-given component of human nature—or, to use more secular language, a natural inclination. He presents as evidence the credulity of children which, he claims, is unlimited in young children, and, although tempered by experience, remains present throughout life.

Contemporary philosophers who advance anti-reductionist or at least partly anti-reductionist views include Burge (1993, 1997), Coady (1992), Graham (1997, 2000a, 2000b, 2006a, 2006b, 2010), Henderson (2008), and Pritchard (2004). In addition to the coherentist argument noted above, Coady (1992) advances a linguistic argument in favor of anti-reductionism, claiming that in order to understand testimony one must consider much of it to be true. Coady refers to Davidson's (1973) theory of radical interpretation and "Principle of Charity," which holds that in order to communicate with others we should, whenever possible, interpret what they say as if the beliefs that they hold are similar to our own. In Davidson's words, "we make maximum sense of the words and thoughts of others when we interpret in a way that optimizes agreement" (p. 19). Coady goes on to argue that in order to understand language it is necessary to trust linguistic reports, which leads to a transcendental argument for testimony. Coady claims that he does not understand how it could be possible for the body of testimony in a community to be found, empirically, to have no relation to reality. He does not provide a theory of knowledge to provide this connection, but argues that his claim shows that the problem that reductionist accounts of testimonial justification set out to solve is merely a pseudo-problem (Coady, 1994).

A number of writers take issue with Coady's claim. E. Fricker (1995) maintains that although a Davidsonian-like argument might hold regarding beliefs, and we can assume that the concept of a believer requires that beliefs are mostly true, this does not extend to an argument that assertions are mostly true. Shogenji (2006) claims that the justificatory presumption claimed for this sort of argument need not be granted, and that all it provides is an assumption that testimony is true—a hypothesis that requires and can receive subsequent (and, Shogenji argues, reductionist) justification.

Burge presents a strong form of anti-reductionism, claiming that testimony is *prima facie a priori* (i.e., at first view, independent of experience) justified. His "Acceptance Principle" states: "A person is entitled to accept as true something that is presented as true and that is intelligible to him, unless there are stronger reasons not to do so." (1993, p. 467). As long as the recipient understands the testimony, and has no reasons *not* to accept the testimony, that individual is *a priori* entitled to accept it—no further evidence is required *to* accept that testimony. This

entitlement goes beyond Reid's claim that testimony is generally acceptable to a claim that individual beliefs formed on the basis of testimony are *a priori* justified. When presented with testimony the recipient can simply accept it without looking for additional evidence. Burge offers a rationalist argument for this Acceptance Principle, claiming that reliance on that received from rational sources is necessary for the function of reason. Like Siegel, Burge links rationality to truth. Burge's particular claim is that a rational source is a *prima facie* guide to truth. In a move similar to Coady's, Burge compares his Acceptance Principle to Davidson's Principle of Charity. However, he points out that unlike Davidson's principle, which applies to interpretation from one language to another, the Acceptance Principle applies to communication where no interpretation is assumed. In other words, Burge's principle is an epistemic principle, whereas Davidson's is a semantic principle. Burge goes on to claim that both rationality and content preservation can be presumed in testimony, and that this presumption does not need justifying; all the recipient need do is understand that which is communicated. If testimony is understood, then the content of the testimony is communicated, and that content is preserved. Further, if testimony is understood, that is a *prima facie a priori* sign of rationality and, given the tie between rationality and truth, the recipient is *a priori* entitled to accept that testimony. Burge does not claim that this *a priori* entitlement is indefeasible, nor does he claim that adults always, or even often, appeal to the Acceptance Principle. In practice, it is applied only if there are no positive reasons for or negative reasons against accepting the testimony available to the recipient. In most cases there are reasons of some sort available that tell for or against any given piece of testimony, and these reasons factor into the recipient's decision regarding, and justification for, acceptance or rejection of the testimony.

The result, in practice, is that in most cases an individual will have reasons for or against accepting testimony that are stronger than this initial entitlement. In these cases, the recipient's acceptance of the testimony would be considered valid from a reductionist position, whereby reasons for accepting testimony are required, as well as from Burge's anti-reductionist perspective. However, the recipient is not always in possession of these sort of reasons. Burge (1993) claims that

unquestioned reliance is … common in adult life. When we ask someone on the street the

time, or the direction of some landmark, or when we ask someone to do a simple sum, we

rely on the answer. We make use of a presumption of credibility when we read books,

signs, or newspapers, or talk to strangers on unloaded topics. We need not engage in

reasoning about the person's qualifications to be rational in accepting what he or she says,

in the absence of grounds for doubt. Grounds for doubt are absent a lot of the time (p.

469).

Aside from this sort of practical application, Burge holds that without the basic entitlement the

Acceptance Principle provides language acquisition would not be possible, as unquestioned belief

is necessary to kick-start the language learning process.

Numerous writers have argued against Burge's position. Neta (2010) holds that Burge

brings externalist notions of entitlement into a more limited internalist concept of justification, that

is, that Burge brings factors that are unavailable to the individual into an account of justification

where the factors affecting justification are supposedly available to the individual. Christensen

and Kornblish (1997) claim that the scope of *a priori* justification is too narrow for it to do any

real philosophical work. Malmgren (2006) argues against Burge's claim that testimony is a

"purely preservative" process—that it transfers the belief along with its original warrant. Rather,

she argues, the process of testimony plays an epistemic role, and beliefs obtained through

testimony are not *a priori* warranted. Casullo (2007) also argues that Burge's attribution of

content preservation to testimony is incorrect. Despite these criticisms Burge's anti-reductionist

account has proven difficult to dismiss, and remains extremely influential.

Other anti-reductionist accounts with weaker claims have been proposed. Pritchard

(2004) characterizes the anti-reductionist proposal as a claim that beliefs based on testimony are

justified in spite of being fallible and not self-evident. This claim, he argues, is too strong if an

internalist account of justification, where justification is available to the individual, is offered.

The most that can be claimed on such an account is an initial entitlement to form beliefs based on

testimony, not that these beliefs are actually justified. To make this further claim would require an

external, reliabilist account—that is, an account in which testimony is a reliable process, whether or not the recipient is aware of this reliability.

Graham's anti-reductionist account (2006a) also makes weaker claims than Burge's account. Graham argues for a *prima facie pro tanto* (i.e., at first view, to that extent) justification, which holds that testimony can be accepted "all things being equal." Unlike Burge's *a priori* justification, which does not put any qualifications on the justification provided, Graham's *pro tanto* justification is qualified. Testimony should be accepted on a qualified basis barring evidence or reason not to accept it. A higher level of justification is withheld pending additional checking for evidence for, or lack of evidence against, the testimony. Graham thus contrasts two versions of *prima facie* justification—a strong version, in which the event of comprehending that *p* has been presented as true is *on balance* justification for a belief *p* (which he claims is the standard view, or Burge's view), and his own weak version where this event provides only *pro tanto* justification. In other words, "on balance" justification claims enough justification, whereas "*pro tanto*" justification claims some justification.

4.2.3 Hybrid Views

Some writers hold hybrid reductionist / anti-reductionist views, which, they claim, retain the benefits of and answer the objections to each approach. These writers include Faulkner (2000), Goldberg (2006a, 2008, 2010b) and Lackey (2003, 2008), and involve attributing portions of the process of justification to the provider and other portions to the recipient.

Faulkner (2000) claims that testimony should be distinguished from perception and memory. With perception and memory our reasons for accepting a belief are the same as those for justifying it. According to Burge's Acceptance Principle this similarity holds for testimony as well because, barring reasons to the contrary, we are entitled to accept as *true* that presented as true. Faulkner argues that the Acceptance Principle should be replaced with a "Principle of Assent" holding that, barring reasons to the contrary, we are entitled to accept as *justified* that presented as true. Testimony brings with it an initial entitlement to hold a belief, but does not of itself constitute justification for that belief. The recipient is justified in *accepting* the testimony, but

does not hold justification *for* the testimony. Faulkner's "Principle of Warrant" places the actual warrant for the provider's testimony with the provider. The recipient is justified in accepting the testimony, but justification for that testimony is held by the provider. Applied to the earlier example, John is justified in accepting the provider's testimony regarding the location of the Empire State Building (i.e, John is entitled to hold a belief based on that testimony), but the actual justification for that testimony is held by the individual who gave him the directions.

Lackey (2006, 2008) proposes a similar account of testimony in which the justification for testimony depends on both the provider ("testifier testimony") and the recipient ("hearer testimony"). Because the work of justification is shared between the provider and the recipient, overly onerous conditions do not need to be imposed on the recipient. As long as it is rational to form a belief on the basis of *p* one is entitled to form that belief. But this entitlement itself does not ensure justification, as the onus is on the provider to ensure that *p* is truth conducive. As opposed to reductionism, which holds that the recipient must provide non-testimonial reasons or evidence for accepting the testimony, Lackey holds that, beyond rejection of the irrational, testimony does not require justification on the part of the recipient. As opposed to anti-reductionism, which holds that testimony is justified merely on the basis of being offered, Lackey holds that non-testimonial justification is required. However, the recipient does not have to provide that justification—rather, that burden is on the provider.

Goldberg (2006a) offers a similar characterization of testimony, proposing what he terms the "social diffusion of warrant." The recipient must have reasons for granting epistemic authority to the provider. However, these reasons do not exhaust the recipient's warrant for holding the testimony. Additional warrant accrues by virtue of the warrant held by the provider of the testimony. To use Goldberg's phrase, unlike other types of knowledge, for example, perceptual knowledge, the recipient of testimonial knowledge has the right to "pass the epistemic buck" to the provider. Goldberg also places emphasis on the provider's rationality, and claims that this rationality differentiates testimony from, for example, the evidence provided by physical instruments. When relying on a rational provider of testimony, one is relying on that provider to do the epistemic work that would otherwise need to be done by the recipient.

Schmitt's "Transindividual Basing Thesis" (2006) states that a belief based on testimony can be justified on the basis of a good reason that the provider, rather than the recipient, possesses. McMyler (2007) claims that testimonial knowledge is "secondhand" in the sense that the recipient's belief in the testimony is justified by the authority of the testimony's provider. That is, the recipient can justify his or her acceptance of the testimony by citing the provider, and thus defer any challenges to the testimony back to the provider. As such, testimonial knowledge is secondhand in that the provider at least holds some of the justification for the recipient's belief.

Hybrid accounts of justification should be distinguished from externalist accounts. In their overview of externalism Carter, Kallestrup, Palmeros, & Pritchard (2014) characterize the internalist/externalist distinction in epistemology as one in which "epistemic internalists hold that one's justification should always be internal to one's conscious mind, whereas epistemic externalists deny this claim" (p. 64). In other words, externalist (e.g., reliabilist) accounts hold that individuals can hold justified beliefs without knowing, or being able to know, that they are so justified. For example, a person might come to hold a belief via a reliable process, but have no means of becoming aware of that fact. Although the individual cannot know that she is justified she can be seen, from an external perspective, to be justified, and to hold justification for the belief. The internalist claim is that justification must be potentially available to the individual on reflection. On both the internalist and externalist accounts the individual's belief is justified by virtue of justification that the individual holds, whether or not that individual is, or can be, aware of that justification. The hybrid account, by contrast, holds that in the case of testimony the recipient is justified by virtue of justification that the recipient does not in fact hold, and that is held by the provider.

It might be thought that indirect reductionist accounts such as E. Fricker's are hybrid accounts, because, like hybrid accounts, they place onus on the recipient to justify the provider's credibility and on the provider to justify the testimony itself. However, under hybrid accounts the justification held by the recipient is sufficient to *accept* the testimony, whereas under indirect reductionist accounts the justification that the recipient holds is sufficient to both *accept* and *justify* the testimony. In practice, this distinction might not be apparent unless the belief is

challenged. Applied to the earlier example, an indirect reductionist would hold that if John is justified in believing the provider to be reliable, then John is justified in believing the testimony even if the person providing the directions was just guessing where the Empire State Building was. On the hybrid account, although John is justified in accepting those directions, the testimony itself is not justified for John, as justification is shared and, in this case, the provider cannot provide justification for her directions.

4.2.4 Section Summary

Views of testimony that take either the reductionist or anti-reductionist approach can be categorized as evidential accounts of testimony, in that they rely on evidence of some sort to support the testimony. The extreme anti-reductionist position claims that testimony provides its own evidence, whereas reductionist and hybrid views look either to the testimony's recipient, provider, or both to supply evidence of another sort. However, it is a matter of debate as to what evidence entails in the testimonial environment. According to Coady (1992), a statement p offered as testimony is offered as evidence that p. This characterization of testimony as a form of evidence is frequently challenged. E. Fricker (1995) argues that to maintain that testimony p is evidence that p is to move the epistemological question from one of justification (i.e., "is testimony p justified") to a question of definition (i.e., "is p testimony or not"). Graham (1997) claims that to supply testimony, even with the intention of supporting it, is not to supply evidence. Coady's mistake, he claims, is to apply an analysis of formal testimony (i.e., testimony as it is presented in courts of law) to natural testimony. Lackey (2008) takes issue with two aspects of Coady's evidential account. First, echoing Fricker, Lackey claims that by requiring the statement to be evidence, a statement that does not comprise evidence would not be testimony. This requirement, according to Lackey, puts epistemological considerations in the wrong place. These considerations should not determine what is or what is not testimony, but should distinguish between good and bad testimony. Second, Lackey takes issue with the claim that the provider's intentions and the recipient's needs factor into what is testimony and what is not. It is quite

possible, she claims, that a statement can be a source of knowledge even if, for example, the person issuing the statement did not intend it to be used as such.

4.3 Social Accounts of Testimony

The accounts of testimony examined in Section 4.2 focus on justification for testimony, and differ primarily in regards to what justification is required for testimony and where that justification should be located. While these types of accounts represent both the history of discussion of testimony as well as much of the current debate, other accounts of testimony have been put forward. These accounts can be divided into two types—accounts that look to society, or to various factors that are social in nature, and those that are descriptive, and look to descriptions of how testimony is actually accepted by recipients. This section will look at accounts of the first type, that is, accounts that look to society or to various social factors.

4.3.1 Assurance View of Testimony

The "Assurance View" of testimony is billed by its supporters as an approach that bypasses the reductionist / anti-reductionist debate, or what they term "evidential accounts." According to the Assurance View the provider takes responsibility for the truth of the testimony, and the recipient relies on the provider's assurance that the testimony is true. As opposed to evidential accounts in which testimony either provides evidence that p or provides warrant that the recipient can take it that there is evidence that p, there need not be any such evidence—just the provider's assurance and the recipient's trust in that assurance. In other words, assurance rather than evidence is given, and the recipient can be said to trust the provider rather than believe that the provider's testimony is true.

The Assurance View is generally attributed to Moran and Hinchman who, in turn, build on the work of Ross (Schmitt, 2010). Ross (1986) claims that in order for questions of truth to arise in discourse there must be standards of correct use that providers generally attempt to, and succeed in, meeting. The existence of these standards means that there is more going on in testimony than presentation of evidence. Membership in a rule-governed community entails not

only a duty to conform to those rules, but an entitlement and obligation to assume, reasons to the contrary notwithstanding, that other members of the community are operating in accordance with those rules. As such, to be told that *p* is to be placed under an obligation to accept *p* independent of any evidential considerations. Moran (2006) focuses on the standard case of testimony where someone tells another person something and is believed. "Telling" is different from other acts, such as arguing or persuading, that can lead to belief on the part of the recipient. With telling, the provider gives assurance that *p* is the case and thus assumes responsibility for the truth of *p*, and recognition of this intention provides the recipient reason to believe *p*. The recipient thus believes the testimony on the basis of assurance that the provider offers rather than on the basis of evidence that, for example, the provider is reliable.

Hinchman (2005) focuses on "acts of telling" that are distinguished from other speech acts by the teller inviting trust and thus taking on part of the recipient's epistemic responsibility. The recipient's entitlement to believe derives from that recipient's understanding of the social act of telling and subsequent recognition of this entitlement. Hinchman claims that contrary to accounts such as Burge's, where the act of telling itself grants an entitlement to the recipient, the provider's act of telling only makes that entitlement available. That entitlement is not "cashed in" until it is recognized as such and accepted on trust by the recipient.

As noted in Section 4.2.3, Faulkner's earlier work can be characterized as a hybrid account. In later works (2007a, 2007b, 2008, 2010, 2011) he explores an assurance account, examining the respective roles of evidence and trust in the acceptance of testimony. Trust is belief in the provider rather than evidence-based belief in the provider's testimony. Based on a distinction he attributes to Hollis, Faulkner differentiates between "predictive" and "affective" trust. Predictive trust can be placed in an individual, or in any reporting mechanism that has proven reliable. Affective trust is not based on reliability, but entails a presumption of trust. In other words, predictive trust entails some sort of evidence for the provider's reliability, while affective trust does entail any such evidence, but describes a relationship in which the recipient places trust in the provider independent of evidence for the provider's reliability. Assurance accounts look to affective rather than predictive trust. Affective trust is part of what distinguishes

testimony from other means of acquiring knowledge, and constitutes a non-epistemic obligation to give the provider the benefit of the doubt without having evidence for the provider's reliability or testimony. This obligation is part of a relationship of trust. The recipient is placed under an obligation to trust the provider, and the provider is placed under an obligation to be trustworthy. Faulkner does not claim that this trust cannot be violated, or that there is an obligation to trust everyone. Rather, these trust relationships develop in accordance with social norms. Applied to the earlier example, John might trust someone wearing a police uniform, and based on that trust, accept the directions provided, but not trust someone who approaches him and asks for money in exchange for directions. An assurance account of this situation would view John's trust in the police officer rather than the panhandler as being in accordance with certain social norms, whereas an evidential account of the situation would view John as having evidence (such as his prior experience) for his belief that the police officer is reliable and the panhandler is not.

The Assurance View thus emphasizes trust rather than evidence. Trust involves a relationship between providers and recipients that places obligations on both parties. Providers have an obligation to tell the truth, and recipients have an obligation to believe what they are told. Although this sort of relationship is not incompatible with evidence based views that require the recipient to have sufficient evidence (or sufficient lack of negative evidence) to trust the provider, assurance accounts move the basis of trust from evidence of trustworthiness to a commitment to trust.

This commitment is defended by a number of writers. Govier (1993) considers most of these defenses to be instances of what she terms the "Argument from Consequences," which holds that to not trust other people is to undermine the epistemic community that is necessary for the development and persistence of knowledge. Foley (1994) maintains that it is reasonable to grant what he terms "fundamental" rather than "derivative" authority to testimony. To deny this distinction, and to claim that any authority attributed to testimony is derivative, is to maintain a position of what he terms "epistemic egoism" (p. 55). Foley claims that it is not coherent to trust ourselves but to not trust others. Thus, even if one has no evidence regarding, or positive reasons for accepting, the reliability of a provider, it is still reasonable to accept that provider's testimony.

Broncano (2008) claims that testimony is one of the social activities that is essential for building the minimal social bonds of society. This type of act requires "explicit consent and recognition of the situation" on the parts of both provider and recipient. This recognition places them in a situation where they are subject to the social bonds that generate a particular epistemic perspective and in which knowledge is shared. Testimony thus receives a social explanation rather than an explanation in terms of individual rationality that accounts such as Burge's provide. Keren (2007) claims that recipients grant providers epistemic authority by trusting the providers (something recipients can easily do) rather than on the basis of whether or not the providers actually know what they are testifying about (something recipients cannot easily verify). Finally, Lehrer (2006) describes what he claims is a virtuous rather than a vicious circle in which recipients evaluate the trustworthiness of providers, but must rely on provider's testimony to evaluate their own trustworthiness as evaluators.

Although many of these arguments for trust are rooted in the pragmatics of social relations, related arguments from a moral standpoint have also been advocated. Govier (1993), for example, lists two. First, according to the "Argument from Respect for Persons," failure to grant credibility to others is to deny them respect. As such, given no reasons to the contrary, we should accept what they tell us. A similar "Argument from Human Form of Life" maintains that being human entails an obligation to regard other persons as humans, and, as such, requires us to be open to what they have to say. Lipton (1998) also calls for a renewed focus on the moral dimension in his comparison of Shapin's "A Social History of Truth" (1994) with Coady's "Testimony" (1992). Although he disagrees with Shapin's relativistic tendencies, he claims that Shapin's emphasis on the moral elements in the epistemology of testimony, which are largely ignored in mainstream philosophy, should be heeded.

The Assurance View of testimony has been criticized by a number of writers who espouse evidential accounts. For example, Adler (2002) claims that testimony does not rely on trust, but on the fact that we have good evidence to extend trust to providers of testimony. E. Fricker (2002) claims that any role trust might play in justification turns out to be insignificant given the role played by evidence. Lackey (2008, 2011a, 2011b) argues that the Assurance View

is epistemically vacuous, as the interpersonal features it depends on are not epistemically relevant and do not provide for any truth-conducive features of testimony. Her claim is that testimony can be viewed as either interpersonal or epistemological, but not both, and that these interpersonal views of testimony do not demonstrate a connection with truth. Schmitt (2010) is in general agreement with Lackey that the Assurance View does not provide for epistemic justification. However, he distinguishes between an "agreement" version of the Assurance View and what he calls a "communicative norm" version. According to the agreement view the provider's assurance and recipient's acceptance of that assurance constitute an agreement of sorts. On the communicative norm version an implicit agreement is not required. Rather, the provider's assurance is granted by the norms of communication, and this assurance gives the recipient a *prima facie* reason to trust the provider and accept the testimony. Schmitt claims that views such as Moran's that Lackey and others object to are agreement versions, and suggests that a communicative norm version would be less problematic.

Dewhurst's (2009) view of testimonial justification is based on communicating and, although not trust-based, is similar to trust-based accounts. She contrasts her approach with Burge's, whereby the intelligibility of testimony provides evidence of rationality which in turn is a guide to truth, and the trust view, whereby the recipient's trust in the provider gives the provider reason to provide honest testimony. She claims that what the trust view gets right is the role of the provider's intentionality—"a speaker's reason to be sincere is entailed in having a reason to assert anything at all" (p. 94). However, she goes on to claim that if the speaker intends to communicate, and the recipient recognizes that intention, then trust does not come into play as the recipient would need an extraordinary reason to doubt the sincerity of the testimony. The recipient's entitlement to accept is not due to the provider "being sincere" in a sense that requires trust, but because the very nature of asserting, or attempting to communicate information to another person, assumes this sincerity. Providers might want to bring about beliefs in recipients by other means and have other intentions. But if the intention is to communicate, then the recipient is entitled to accept the communicated testimony as sincere.

Whereas evidential accounts of testimony look to either the provider or the recipient of testimony for justification of that testimony, arguments for assurance accounts often rely on appeals to the social context in which the testimony occurs. Other views of testimony give primary focus to this social context. Two general approaches to this social context can be identified—those that view knowledge itself as socially based, and those that view justification as socially based.

4.3.2 Communitarian View of Knowledge

The most extreme social views are communitarian in nature, and locate knowledge itself in communities rather than in individuals. Such a view is presented as an option by Hardwig (1985) when he suggest that "perhaps that p is known, not by any one person, but by the community" (p. 349). This suggestion has been taken up by Welbourne (1986, 1994, 2002) who considers the concept of knowledge to be rooted in the social practice of testimony. Testimony, he claims, provides the environment in which the idea of knowledge as objective rather than subjective was formulated. Although belief is individual and subjective, knowledge itself is objective and social.

Kusch (2002a, 2002b, Kusch & Lipton, 2002) builds on Welbourne's work. He views testimony as both a communitive and performative act. For Kusch, testimony involves learning from communication. An act of testimony is a performance in a community that confers a certain social status on the provider, the recipient, and the testimony itself. According to Kusch's communitarian epistemology, knowledge is inherently social rather than individual—to attribute the status of "knowledge" to a statement is to place it in a context of social discussion, argument, and justification. Justification is social, and, because justification requires communication, testimony is constitutive of all justification.

Tollefsen (2007) holds that individual testimony does not exhaust the full range of testimony. She considers groups as well as individuals to be sources of testimony, and claims that group testimony might not represent the views of any of the group members. Much group testimony takes place within institutional rules such as those of legal, government, or scientific

communities, and relates to matters pertaining to that group's expertise. Tollefsen also claims that we are much less adept at assessing this group testimony than we are at assessing the testimony of individuals.

4.3.3 Reliabilism

More common and less extreme are externalist views that focus on societal factors that contribute to, or are constitutive of, the process of justification. Whereas internalist accounts maintain that the justification for a belief must be available to the individual holding that belief, externalist accounts do not consider this availability to be necessary. The most common example of an externalist perspective is reliabilism in its various formulations. Reliabilism maintains that a belief is justified if it is the result of a reliable process, and that this justification stands whether or not the individual holding the belief is aware of that fact. Accounts of reliabilism such as Goldman's (1999, 2011) maintain that many of these reliable processes are social. Goldman looks to reliable processes as external justification mechanisms for testimony. For example, if an individual comes to know a claim of biology through something that results from a reliable process such as a textbook, scientific paper, or a popular science account, that individual is justified even if she cannot provide the requisite evidence for the claim herself.

As noted in Section 4.2.3, Goldberg presents a hybrid account of testimony similar to Lackey's. In other writings (2006b, 2007) he presents an account based on social factors. According to this account knowledge is located with the individual rather than with society, but justification is distributed among individuals in a community. In order to distinguish his position from those such as Welbourne's or Kusch's, he uses the term "anti-individualism" rather than "social epistemology" to characterize his position. Goldberg's account is reliabilist and externalist. He claims that there is a social diffusion of warrant, in that the total epistemic support for testimony is not available to the recipient. He distinguishes between the justification that the recipient has and the total epistemic support that the recipient has. Part of that epistemic support is inaccessible to the recipient, even though it might have a more direct bearing on the belief the recipient acquires on the basis of testimony than the justification the recipient actually holds.

Goldberg considers his account of testimony to be related to hybrid theories that distinguish justified acceptance of testimony from justification of the testimony itself. However, Goldberg claims that an additional consequence of his position, derived from its reliance on the community, is that public linguistic norms must be available, and that it does not make sense to talk about successful communication without being able to reference these norms.

4.3.4 Genealogical Accounts

Craig (1990) and B. Williams (2002) provide genealogical accounts of testimony. Craig focuses on the recipient of testimony, whereas Williams focuses on the provider. These accounts bear resemblance to "state of nature" accounts in political philosophy, for example, Rawl's determination of principles of justice through the analysis of a hypothetical and idealistic "original position" that is independent of the particularities of any given society.

According to Craig (1990) the traditional approach to knowledge begins by analyzing the word "know," and usually results in a set of necessary and sufficient conditions for knowledge. However, application of these conditions produces an unacceptably small subset of what we institutively consider to be knowledge. Rather than looking for a set of necessary and sufficient conditions for knowledge, Craig sets out a prototypical case of information provision that deviates according to circumstances. He begins by setting out a concept of knowledge as that used by inquirers to "flag approved sources of information," and goes on to develop an account of how this concept developed in society. For Craig, the main issue around knowledge is to be able to characterize reliable informants and distinguish them from those who are unreliable.

B. Williams (2002) imagines a "state of nature" that is constructed so as to characterize our epistemic, rather than political, needs. He distinguishes the contemporary commitment to what he terms "truthfulness," or a desire not to be deceived, from the contemporary suspicion about the existence and nature of truth itself. The critical attitude engendered by the former leads to doubt about the latter, and his goal is to mitigate this doubt. Following Craig, Williams provides a genealogical account, or explanation, of how truth seeking came about. A genealogical account is an imagined history of how something came to be. Given certain assumptions around

how human society formed, in particular the need for cooperation not only in action but in sharing

information, Williams argues that an epistemic practice emerged around the twin virtues of

sincerity (asserting truth rather than falsity) and accuracy (due diligence in ensuring the truth of

the assertion). Although this epistemic practice admits of cultural variation, Williams claims that

certain things are common to all cultures, including the virtues of sincerity and accuracy, and the

role played by truth. For example, because that proposed as an assertion is expected to be true,

truth is considered to be the "norm of assertion." This norm does not ensure truth, as individuals

might assert falsehoods for various reasons. In order to discourage falsehoods societies develop in

such a way that the virtues of sincerity and accuracy become ingrained in information providers.

As a result, sincerity and accuracy are not simply dispositions to follow a rule, but are values that

shape the attitudes and behavior of information providers. However, even though these values are

ingrained Williams rejects claims such as Burge's that trust is the default attitude towards a

provider, and argues that to advocate trust without knowing anything about the source is to give

bad advice. Rather, we must understand the context of the particular situation to know if it's

reasonable to presume trust.

4.3.5 Social Practices

The final group of social accounts of testimony that will be examined are those that do

not call on the nature of society *per se*, but that call on particular social practices. M. Fricker

(2010) claims that although individuals are responsible for their beliefs' justification, they are

called on to provide this justification only in the context of what she terms a "social practice of

proper challenge." This practice relates to the "Default and Challenge" model of justification that

she attributes to Brandom (1998) and that is taken up by M. Williams (2008). This practice places

a limit on what is required of the individual, who is required to present justification only when

challenged. As such, Fricker argues that individuals should be viewed as inquirers, not examiners.

She also refers to Craig's notion of a reliable informant, and notes that an inquirer is looking for an

informant that is likely to be right, and that the context of the inquiry determines what makes the

informant likely to be right.

Reynolds (2002) provides a related account of testimony and knowledge. He argues that an account of testimony can be used to explain knowledge. For Reynolds, the primary (but not only) purpose of using the word "know" is to encourage good testimony. Talk of "knowledge," he claims, is better elucidated by looking at the social goal of improving testimony than by looking at the individual goal of believing the truth. He argues that the concept of knowledge most likely came about through the social practice of testimony. Although truth is a goal of testimony, the practice of testimony would fall short if only true testimony was deemed praise-worthy. Individuals need to be encouraged rather than condemned for putting forth testimony of which they are not completely certain, as that testimony could be useful. For example, even if someone was not completely sure that it was the enemy that was spotted, the community would still want to be put on alert. Reynolds thus concludes that testimony is still legitimate even if the provider cannot guarantee its truth. Testimony, then, is just that which is acceptable according to the testimonial norms of a community, which in turn results from the history of what has been accepted by that community as successful testimony. Although false statements will in some cases be propagated by legitimate testimony, the community norms will, as the "spot the enemy" example illustrates, determine when this is appropriate and how this type of possibly-false testimony is to be dealt with.

Other examples of writers on testimony who incorporate ideas of social norms into theories of testimony that are not genealogical in nature include Adler, who views his default position as an easily defeasible norm. Adler notes that the "background" which recipients rely on when evaluating testimony includes awareness of social practices and conventions along with evidence from prior experience with testimony. Communities have norms governing the practice of testimony that are generally complied with. Providers of false testimony are subject to disapproval from recipients along with other sanctions from the community (2006).

Faulkner's later work also invokes societal norms. Although his earlier work comprises a hybrid reductionist / anti-reductionist account, his later work explores the possibility of an assurance account. In this work (2010) he notes that social norms are imperatives that are prescriptive of actions, and that these prescriptions are not universal, but are relative to society.

Violations can invoke guilt in the perpetrator, resentment in the victim, and anger or disapproval from others. Faulkner likens the norm of "truth-telling" to Grice's Cooperative Principle, and says that on the provider's side it is less about truth telling than in being cooperative in conversation, and less about credulity on the recipient's side than about presuming cooperation (p. 130). Providers who satisfy the Cooperative Principle and its attendant maxims fulfill a "social norm of trustworthiness," and recipients a "social norm of trust" (p. 132).

Other accounts that reference social factors include Origgi's suggestion that the pragmatic and contextual norms of communication should inform the epistemic standards that govern testimonial exchanges (2008), and Pettit's analysis of a "majority rules" approach towards evaluating testimony (2006a, 2006b). Another example, albeit from outside the core testimonial literature, is Longino's (2002) analysis of scientific knowledge in which a particular community is relied on to track scientific truths.

4.4 Descriptive Accounts of Testimony

Some accounts of testimony provide a descriptive account of testimony that are based in psychology. Thagard (2005) proposes a "prescriptive, philosophical" theory of testimony that is naturalistically based on a "descriptive, psychological" theory of how people actually respond to testimony. The result is a "dual pathway," where the default path is to accept testimony from a credible source that is consistent with the recipient's beliefs, but to enter a reflective path if either that credibility or consistency is violated. Lyons (1997) argues that the justification provided for testimony is usually based on folk psychology, and that a full account of the justification of testimonial beliefs cannot be resolved by appeal to *a priori* arguments, but must take into account empirically based psychological theories as well. Henderson's (2008) discussion of monitoring requires that the right sort of cognitive processes be in place to make this monitoring, as he terms it, "epistemically appropriate."

Finally, a number of theorists explore a parallel between knowledge obtained via memory and that obtained via testimony, as both memory and testimony lack the immediacy of perception based knowledge (Burge, 1993; Christensen & Kornblith, 1997; Day, 2008; Dummett, 1994;

Fricker, E., 2004; Goldberg, 2010a; Govier, 1993; Kusch & Lipton, 2003; Lackey, 2008;

Malmgren, 2006; Neta, 2010; Owens, 2006; Sosa, 1994). While these accounts of testimony look

at how individuals actually respond to testimony, and argue that this response must be taken into

account in order to provide a full account of testimony, they do little in the way of providing

normative grounds for testimony assessment.

4.5 Chapter Summary

This section has provided a summary and overview of the literature on testimony. On the

one hand, there is almost no support for direct reductionism whereby individuals are expected to

independently justify everything they receive via testimony. The exception is Adler's account of

monitoring. Although the need to monitor testimony is advocated by both reductionists and anti-

reductionists, Adler claims that testimony is always directly monitored against the background

beliefs and experience of the recipient. As opposed to Adler, most reductionist accounts call for

indirect rather than direct justification. The recipient is justified in accepting testimony-based on

what that recipient can ascertain regarding the provider's competence and reliability.

Reductionists thus maintain that the recipient must have at least some degree of positive evidence

for this competence and reliability, while anti-reductionists require only a lack of negative

evidence. The evidence based views make distinctions regarding degrees and/or types of

justification that should be associated with a testimonial statement. They also make distinctions

regarding what portion of the task of justification belongs to the recipient and what portion

belongs to the provider. Assurance accounts hold that justification is not a matter of evidence, but

results from a relationship of trust between the provider and the recipient. Whether or not one is

sympathetic to assurance accounts, they do bring into consideration the larger framework within

which testimony is conducted. Although evidential views focus on the relative responsibilities of

providers and recipients, assurance accounts broaden that focus to include the social context of

testimony and the roles that society and community play. Other accounts of testimony give

primary consideration to the social factors in the testimonial process. Communitarian accounts

emphasize the community over the individual, and some of these accounts go to the extent of

situating knowledge with the community rather than with the individual. Others similar social accounts situate knowledge with individuals, but look to the community for justification or warrant. Genealogical accounts point to the origins of testimony in the development of societies. Finally, descriptive accounts look to psychological factors evident in the process of testimony

Testimony, which involves the acceptance of a statement on the basis of another's say-so, has been a central issue in recent epistemological discussions in the philosophical literature outside of the philosophy of education. This chapter provided an overview of this literature. Many of the debates in the literature have to do with what is most fundamental or important. For example, some philosophers hold that evidence is fundamental for testimony and that trust is not a consideration (e.g., reductionist views), some hold that trust is fundamental and evidence is not a consideration (e.g., the assurance view), and others acknowledge that both evidence and trust are at play, but that trust is only legitimate if based on evidence (indirect reductionist views). As noted at the beginning of this chapter the purpose of this overview is not to settle any debates in that literature, but to examine the potential application of that literature to critical thinking and critical thinking criteria in particular. This potential will be explored in the chapters to follow, where aspects of that literature will be examined in relation to the identified gap between critical thinking theory and critical thinking practice.

5. CRITICAL THINKING, WIKIPEDIA, AND TESTIMONY

Can the philosophical theories of testimony set out in the previous chapter aid in bridging the gap between critical thinking theory and critical thinking practice with particular application to Wikipedia, and, if so, what are the implications for critical thinking practice? To repeat the statement of purpose for this dissertation set out in Section 1.1: *What theoretical grounding can the current epistemological literature on testimony provide for critical thinking criteria that are applicable to knowledge claims such as those found in Wikipedia?* Chapter 6 will directly investigate the application of theories of testimony to critical thinking theory, and will propose a preliminary theory of critical thinking based on this investigation. Chapter 7 will deal with other issues that result from this preliminary proposal in order to produce a more complete theory of critical thinking. Chapter 8 will investigate how this theory informs critical thinking practice with a focus on critical thinking criteria, and Chapter 9 will apply these criteria to Wikipedia.

Before beginning this investigation into the application of testimony to critical thinking, this chapter will deal with a few preliminary issues that require further exploration and clarification. The first such issue is the relationship between the standard case of testimony and Wikipedia as testimony. What constitutes testimony in the Wikipedia environment, and what factors must be considered when discussing Wikipedia testimony? The purpose of exploring these particular questions is to determine what factors might need to be taken into consideration in the case of Wikipedia that do not need to be taken into consideration in the standard case. By examining Wikipedia as a case of testimony, the testimonial framework can be used to draw out and clarify these factors.

The second issue is the relationship between testimony and critical thinking practice. How do cases of testimony compare to the cases of applied critical thinking? The purpose of exploring this question is to determine the extent to which testimony and critical thinking are directed at the same type of case. If they bring different perspectives to the same type of case, then accounts of testimony have the potential to provide insights that critical thinking can take advantage of. If they do not address the same type of case, then the connection is more tenuous and any connections between the two must be more carefully drawn out.

The third issue is the relationship between testimony and critical thinking theory. While the next chapter will delve into that relationship in detail, it is important to clarify exactly what the problem is with critical thinking theory, and what contribution might the theories of testimony make to that solution.

Before setting out to investigate the application of testimony to Wikipedia, the question might arise as to whether it's even possible to extend philosophical discussions of testimony that pertain to the standard case to Wikipedia. One possible objection is that oral and written communication are radically different, and, consequently, that oral and written testimony require different analyses. Although there are differences between oral and written communication (some of which are discussed in Section 5.2.2), many of those differences are more apparent than actual, and many features of one have become features of the other. Ong (1982), for example, claims that "without writing, the literate mind would not and could not think as it does, not only when engaged in writing but normally even when it is composing its thoughts in oral form" (p. 78).

Further, there is nothing in the literature of testimony that suggests that the analyses applied to the standard case should not be extended to written testimony or to Wikipedia. The reason the literature focuses on the standard case is not to exclude other types of testimony, but to keep the focus on the central philosophical issues rather than on the peculiarities of different situations and examples. As noted in Section 4.1, various types of documentary testimony are considered by several writers on testimony, and Wikipedia is explicitly considered as an example of testimony by some of these writers. Coverage in the literature aside, a similar argument could be made for extending the testimonial analysis beyond the standard case as is made for considering testimony in the first place. One of the motivations for considering testimony as a source of knowledge is that we get so much of our knowledge from testimony rather than as IPM knowledge (Coady, 1998). Similarly, we get much of our non-IPM knowledge from documents rather than from face-to-face communication with other individuals. If considerations of testimony were limited to the standard case, much of what individuals hold as knowledge would be excluded from consideration.

5.1 Wikipedia Testimony and the Standard Case

As noted in Section 4.1, in order to remove extraneous factors from the philosophical discussions of testimony these discussions usually focus on a simplified model of testimony consisting of a short assertion made by a single speaker to a single hearer in conversation. Although some writers do discuss what Coady (1992) calls "documentary testimony," they do not go into any detail on this type of testimony, and the philosophical focus remains on this simplified model. For the most part this model has been called the "standard case" although other terms have been used as well. For example, Coady (1992) speaks of "the pure case" in which the testifier testifies directly to the hearer of the testimony (p. 49), and Adler (2006) of the "null setting" in which other factors are abstracted out and the hearer is completely dependent on the speaker for knowing something (p. 4). The standard case is kept simple in order to focus on epistemological issues that are considered both foundational to and extensible to all types of testimony. Wikipedia is both qualitatively and quantitatively different from a simple conversation, and the task of this section is to determine in what way Wikipedia constitutes testimony. It is important to see how Wikipedia testimony compares to the standard case in order to determine how the bulk of the literature, which is implicitly if not explicitly directed to the standard case, can be applied to Wikipedia.

In order to determine how the discussions of the standard case can be applied to Wikipedia testimony, the similarities and differences between the two types of testimony will be set out. The following preliminary definition of testimony was proposed in Section 4.1.

Testimony consists of a statement obtained by a recipient from a provider.

The overview of testimony in the previous chapter began with recognition of what was called the "standard case" of testimony most commonly discussed in the literature, which is a short assertion made by a single speaker to a single hearer. Replacing "recipient" and "provider" with "hearer" and "speaker" in the general definition yields the following preliminary definition of the standard case of testimony that was set out in Section 4.1:

Standard case testimony consists of a statement obtained by a hearer from a speaker.

Similarly, replacing "provider" with "Wikipedia" in the general definition yields the following preliminary definition of Wikipedia testimony:

Wikipedia testimony consists of a statement obtained by a recipient from Wikipedia.

When determining how theories of testimony formulated around the standard case can be applied to other types of testimony, it is important to ensure that elements included in these definitions adequately capture the particular type of testimony that is being defined. The preliminary definition of the standard case focuses on a statement that passes from a speaker to a hearer in the context of a conversation. Conversation is a familiar and intuitive form of communication, and most individuals can participate in a conversation without having to make the norms and practices of conversation explicit. Given the assumptions that can be made about conversation, a definition of the standard case that does not refer to the conversational context is often sufficient. However, this simplicity does not necessarily carry through to other types of testimony. In order to define other types of testimony based on a definition of testimony that is generalized from the standard case, the particular context in which a particular type of testimony takes place needs to be considered in that testimony type's definition. In order to be clear about what is meant by the term "context" when used in this manner, the term *normative discourse context* will be used. A normative discourse context is a context in which discourse takes place that is governed by a particular set of norms and practices.

Another important element is the particular transaction, or what will be termed here the *discourse event*, in which the recipient encounters the testimony. In the standard case, the discourse event is the conversation between the recipient and the provider in which the statement is provided and received. A reasonable candidate for the discourse event in the case of Wikipedia is the Wikipedia article in which the statement is provided and received. Although an individual

might not read the full article, the individual can reasonably expect the writers of the article to

have included in the article any clarification of or expansion on the statement that the writers

considered to be necessary. As a result, the following working definitions of testimony can be

proposed:

> *Testimony* consists of a statement obtained by a recipient from a provider[8] in a particular
>
> discourse event according to the norms and practices of the normative discourse context.
>
> *Standard case testimony* consists of a statement obtained by a hearer from a speaker via a
>
> conversation according to the norms and practices of conversation.
>
> *Wikipedia testimony* consists of a statement obtained by a recipient from a provider via a
>
> Wikipedia article according to the norms and practices of Wikipedia.

With these definitions in place the various elements in the definitions of the standard case

and Wikipedia can be compared. According to the general definition of testimony, these elements

are the statement, discourse event, normative discourse context, provider, and recipient.

5.2 Elements of Wikipedia Testimony

The following breakdown of the elements of testimony is intended to apply to all types of

testimony, although the discussion of these elements will refer specifically to Wikipedia

testimony.

5.2.1 Statement

A *statement* is the smallest unit of expression that is evaluated in testimony. While

testimony often consists of a group of statements that is evaluated as a whole, this evaluation will

depend on the aggregate evaluation of the component statements, and will sometimes crucially

depend on the evaluation of a single statement. In logic a statement is the unit to which a truth

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[8] The term "provider" will refer, as the context dictates, to either an individual provider, a complex provider, or to an individual who is part of a complex provider (e.g., as discussed the case of Wikipedia testimony in Section 5.2.4)

value is assigned, as it makes sense to talk about the truth value of a statement (e.g., "The brown earth is warm today") but does not make sense to talk about the truth value of single words (e.g., "earth") or phrases (e.g., "brown earth"). This does not mean that statements can always be evaluated independently, and the evaluation of a particular statement will often depend on the context provided by other statements.

In the standard case, the unit of testimony (i.e., the smallest unit of expression that can be evaluated) is a single utterance containing a single statement. A single statement is also the unit of testimony in Wikipedia testimony, as Wikipedia's structure makes provision for specific statement to be flagged as problematic or supported by citations.

5.2.2 Discourse Event

The *discourse event* identifies the recipient's encounter with the testimony, and is used to identify the unit of discourse in which the testimony occurs. The term arises from the standard case where the discourse event is an oral conversation. In the general case of testimony the discourse event is determined by the particular media in which the testimony is delivered and the particular encounter the recipient has with that media. As a result, the discourse event might not be an "event" according to a strict definition of the term as something that occurs at a specific time. In the case of Wikipedia testimony, there is no event in which the provider and recipient come into direct contact. The point of contact between the recipient and the testimony occurs when the recipient reads a Wikipedia article, and, as such, the recipient's encounter with the Wikipedia article can be identified as the discourse event in the case of Wikipedia testimony. Although a recipient might not read a full article, or might read Wikipedia content in addition to the article, the expectation is that the article includes information that the article's contributors felt appropriate to present as a unit.

Wikipedia is an instance of written communication whereas conversation, which characterizes the standard case of testimony, is a form of oral communication. Although there is a considerable literature investigating the differences between written communication and oral communication (e.g., Olson, 1994; Ong, 1982), two such features will be highlighted here as being

particularly relevant: the asynchronous nature of written communication, and the iterative nature of written communication specific to the Wikipedia environment.

A discourse event in the case of conversation is synchronous, in that the recipient of the testimony in the standard case receives the testimony at the same time as the provider makes the utterance. The displacement of provider and recipient in Wikipedia testimony results in asynchronous communication. This asynchronicity has both advantages and disadvantages. Synchronous communication, such as a conversation, provides opportunities for immediate clarification that asynchronous communication does not. For example, if the answer John received in response to his question about how to get to the Empire State building was to proceed "seven blocks down and to the right" instead of "seven blocks south and to the right" he would be able to clarify that "down" meant "south." Synchronous communication not only provides the recipient with an opportunity to clarify the content of the testimony, but also provides an opportunity to assess the credibility of the testimony by asking questions that either provide information about the testimony itself or about the provider's qualifications and motivation.

On the other hand, the asynchronous nature of written communication has the advantage of a permanent record that oral communication does not. John might well remember the oral instructions on how to get from Grand Central Station to the Empire State Building, but he might be better off with notes or a map if the directions are more complicated—for example, if he is trying to get to Columbia University by subway (e.g., "do not take the 4, 5, or 6 train and attempt to walk down 100 Street. Take the B or C train instead"). The asynchronous nature of writing provides the opportunity to think and understand before acting or responding, and a record of the testimony that can be re-examined after the initial encounter. Synchronous communication thus offers the advantage of clarification, while asynchronous communication offers the advantage of persistence. Since a Wikipedia article can be easily altered, it might be argued that Wikipedia is not persistent. However, all changes to an article are tracked in the associated article history, and earlier versions of the article can be accessed. As a result, a determined reader can access the statement in its original context, and determine how that statement or other statements in the article have been altered.

Another advantage of asynchronous communication is that it takes place in a context where the recipient can refer to additional information beyond the testimony itself. Wikipedia testimony, for example, is provided in the context of an article, linked articles, references, and other features that the recipient can use to both clarify the content of the testimony and to assess the credibility of that testimony. While a conversation can be extended if the recipient has additional questions, the reader of a Wikipedia article with additional questions can explore information that is directly linked to the Wikipedia article. Within Wikipedia, articles link to a "history" page that logs all edits to the article, and often link to an associated talk page or to other Wikipedia articles containing related content. Wikipedia sources must be cited, so articles are also linked to external source documents.

Additionally, Wikipedia articles often contain evaluative information. Although the primary object of evaluation has been identified as the statement, evaluation of a statement will take into consideration the article in which the statement appears. Sentences within an article might be flagged as controversial or as requiring a citation, and in a limited number of cases the article will have been subjected to oversight by a Wikipedia project group. Although the evaluation of a given article is likely to be less ambiguous than evaluation of Wikipedia as a whole, some articles will be easier to evaluate than others. For example, it will be easier to evaluate an article that cites heavily, has significant internal documentation, or shows evidence of frequent edits, than to evaluate an article that cites lightly, has little internal documentation, or has few edits.

Wikipedia testimony is also *iterative*, or recursive in nature. Wikipedia is not only a provider of testimony, but a recipient of testimony from its cited sources. As a result, Wikipedia testimony is not original, but is derivative of these sources. This dependence on sources changes the nature of what the recipient of the testimony is evaluating with respect to the provider. A parallel between Wikipedia and the standard case would be an extension of the standard case to one where the recipient receives testimony from a provider who claims to be a recipient of testimony from yet another provider. To use a variant of the earlier example, John arrives at Grand Central Station in New York and asks a stranger where the Empire State Building is. The

response is "I only arrived myself, but I just asked someone who lives here, and he said to go south seven blocks and turn right." John is now evaluating the provider's ability to be a good evaluator rather than that provider's expertise regarding the subject matter of the testimony. Similarly, a Wikipedia article is a summary or restatement of information obtained from other accounts. As noted in the previous chapter, the nature of the expertise associated with Wikipedia testimony is a second-order expertise rather than first-order subject expertise. In other words, when evaluating the expertise associated with a Wikipedia article, the question is "does the article demonstrate the expertise to get it right about what subject experts say on the topic" rather than "does the article demonstrate the expertise to get the subject matter right."

There are many other issues that can be brought up when discussing discourse events. For example, if a recipient only hears part of the intended testimony (e.g., part of a news story on the radio, is the discourse event the full news story (the provider's perspective), or just the portion of the news story that the recipient heard (the recipient's perspective)? While these sorts of questions are interesting and important, they are not critically germane to the purpose of this dissertation, and will not be pursued further.

5.2.3 Normative Discourse Context

A *normative discourse context* can be defined as a discourse or a mode of communication that is determined by a particular set of norms and practices. The standard conventions of conversation such as conversational implicature serve as the norms and practices that determine the normative discourse context of conversation. As noted in Chapter 3, there is a significant body of policy that constitutes the norms and practices for creating Wikipedia entries, and these determine the normative discourse context of Wikipedia. The phrase "norms and practice" captures both the conventions for conduct within a particular normative discourse context as well as the fact that practice might in any particular instance deviate from those conventions. For example, a provider might lie in a conversation, or provide incorrect information in a Wikipedia article. Normative discourse contexts are not exclusive, and can overlap. For example, although scholarly communication is a normative discourse context that is defined by certain norms and

practices, scholarly communication in a particular discipline (e.g., physics) determines a narrower normative discourse context.

Although the literature on testimony does not refer to normative discourse contexts as such, theories of testimony which hold that societies develop norms and practices conducive to providing true testimony can be interpreted as referring to normative discourse contexts. It might be questioned whether the interpretation of those theories provide can be extended to Wikipedia, which is an artifact of society and not a society in itself. The contention here is that Wikipedia can be viewed as the product of an explicitly normative society within the context described by the genealogical theories of Craig and B. Williams even though the normative practices of Wikipedia society did not evolve from something like Craig's prototypical case. Rather, the Wikipedia community developed in accordance with a contrived framework of policies and software that provides particular affordances and strictures within the broader context of a pre-existing and larger society. However, the resultant normativity is similar to that which, according to the genealogical accounts, arises in societies. Wikipedia is explicitly normative, and its original policies have developed into a workable and continually evolving hierarchy of policies and guidelines. Although this development was seeded by an explicit set of norms, and took place within the context of a broader society, the Wikipedia environment has evolved along the lines that Craig envisioned for the development of a normative society.

B. Williams, in his version of the genealogical theory, holds that societies develop mechanisms for shaming information providers who violate society's norms and practices. It might be thought that Williams's shaming process cannot be applied in Wikipedia society due to the anonymity of the individual informants, and that this anonymity gives the opportunity to consistently deceive. However, Wikipedia contributors, although anonymous in the broader society, are linked to particular user IDs and thus have an identity in Wikipedia society. As noted in Chapter 3, Wikipedia has proven adept at detecting deception and has a structure in place to catch, flag, and deal with chronic deceivers. Further, the ease with which instances of deception can be removed provides an additional deterrent against deception in the Wikipedia environment. These detection and correction mechanisms serve a function in the Wikipedia community similar,

if not identical, to shaming practices in general society. This supports the contention that the Wikipedia community developed in such a way as to embody the same sort of normative epistemological virtues that pertain to a society that developed through a genealogical process.

5.2.4 Provider

Although the recipient might not know much about the provider in the standard case of conversational testimony, it is usually clear to the recipient who the other party is, and thus who is providing the testimony in the context of that conversation. The *provider* is directly engaged in the conversation, and the recipient can minimally identify the provider as "the person to whom I'm talking" even if the recipient does not know the individual. This identification enables the recipient to obtain contextual clues about the provider and the particular testimony the provider is offering. In the general case, the provider will be the individual or individuals who are responsible for the content of the testimony, and assigning this responsibility can be complicated. For example, the provider in the case of a radio news story might be the broadcaster, the writer of the story, the individuals who contributed content to the story, the editor, or any combination of those individuals.

The situation with Wikipedia has the additional complexity of anonymous contribution compounded by the asynchronous nature of Wikipedia that creates a displacement between provider and recipient. As there is no direct access to the provider, contextual clues associated with Wikipedia testimony are artifacts of Wikipedia and the article itself rather than the provider of the article. Further, the provider in the case of Wikipedia is not only anonymous but composite—a group of individuals rather than a single individual. As noted in Section 3.2.5, although Wikipedia articles might be produced by a single individual they are more likely to be products of contributions from multiple individuals. These contributions might include the addition of content, edits to existing content, addition of links to sources or other sections of Wikipedia, addition of supplementary content such as associated talk pages, or some type of quality assessment. Further, the work of human contributors might be supplemented by various bots. These multiple contributions lead to a complex notion of "provider," and in most cases the

recipient does not know the details of this complexity. To quote Stivilia et al. (2008), "the Wikipedia community … places trust not in a single expert author or group, but in the collective knowledge of a large-scale, distributed community" (p. 994).

The literature on testimony provides a number of options for characterizing this community. Tollefsen (2007), as noted in Section 4.3.2, compares the Wikipedia community to what she calls "group testimony." The concept of group testimony posits groups rather than individuals as testimony providers. This group testimony might not represent the testimony of any of its members, nor be summative of the individual testimony of those group members. Rather, group testimony takes place in communities with institutional rules such as legal, government, or scientific communities, and is about matters that are reflective of the group's expertise. For group testimony to occur the group must have a particular function in the community, and there must be a normative context within that community whereby assertions provided by the group in the fulfillment of that function are sanctioned as group testimony. For example, the report of a government commission is not considered to represent the testimony of any particular member of that commission, but to be group testimony in fulfilment of the commission's mandate. One or more individuals might be primarily responsible for the actual writing of the report, but the contents of the report will include expert opinion, representation from various interests groups, and research provided by other individuals. Tollefsen focuses one of her papers (2009) on Wikipedia, which she views as a source of testimony, and asks whether that testimony is provided by individuals or by Wikipedia as a community or organization (p. 11). She finds that the social context around Wikipedia is sufficiently robust to consider Wikipedia contributors as a community rather than as just an aggregate of individuals. She also finds that Wikipedia's decision-making processes provide, as she puts it, "a mechanism … for the forming of group illocutionary intentions," and thus of making Wikipedia group testimony. However, she grants that status only to articles that are labeled "featured" and "good," and hence subject to a review process and explicitly approved by the Wikipedia community (p. 16). In Tollefsen's view, the majority of Wikipedia articles, which have not been subject to this process, represent individual rather than group testimony.

M. Fricker (2012) explores a similar idea, which she terms "group testifier," in relation to Wikipedia. She asks whether Wikipedia and similar bodies can serve as a genuine group testifier rather than merely as a group source of information (p, 249). Fricker uses Gilbert's account of "plural subjects" to inform her concept of what comprises a group, or, in her terms, "a certain robustly and stably collective agent" (p. 270). Gilbert's plural subjects are formed when group members agree, under certain terms, to do a certain thing as a group. The question for Fricker is whether or not the Wikipedia community demonstrates the joint commitment necessary to qualify as a plural subject. For Fricker, this joint commitment results in a community that speaks with one voice, and Wikipedia, by contrast, is an aggregate of individual voices. As a result, Fricker does not consider Wikipedia in its current form to be the product of a group in the sense of a plural subject—rather, "it provides us with a nice example of a collective active source of information" (p. 274).

Tollefsen's and Fricker's analyses indicate that there is insufficient support to consider Wikipedia to be testimony of an identifiable group that speaks with a united voice. At the beginning of her paper Fricker asks if "the group testifier is a collective and not merely a sum of individuals testifying in one or another form of aggregated chorus" (p. 249). Is the choice between viewing Wikipedia as a group testifier or an aggregate of independent individual testimony a dichotomy as this quote suggests, or might there be a middle ground? Contributors to a Wikipedia article add or edit content in the context of previous contributions to the article, and as a result the testimony they provide is not independent from that earlier testimony. While the resulting testimony is not the testimony of a unified group, it is the product of a community, and not just the product of an aggregate of individuals each adding their independent contribution. This type of testimony will be called "community testimony," and will be defined as the product of a community of individuals acting cooperatively if not in unity. This community need not speak with one voice, but it does cooperate when producing testimony. Consequently, the result is more than an aggregate of the independent voices of the individual Wikipedia contributors.

5.2.5 Recipient

In the general model of testimony as well as the standard case and Wikipedia testimony, the *recipient* is the individual receiving the testimony. Although the same testimony might be received by a number of individuals (e.g., all individuals who read a Wikipedia article) the testimony is received by each recipient on an individual basis. This provides a parallel to critical thinking where the individual critical thinker is the evaluator.

An utterance in the standard case is intended by the provider for the other individual in the conversation. A Wikipedia article is not directed to a particular individual but to an audience of some sort, which might be a general audience or a specialized audience that has a particular interest in and mastery of the subject matter that the article addresses. The fact that Wikipedia testimony is not directed to a particular individual has at least two implications—the relevance of the testimony to the individual, and the individual's ability to understand that testimony.

As conversation in the standard case takes place with the recipient as an active participant it is assumed that the testimony provided is at least somewhat relevant to the recipient's interests and concerns. In the case of Wikipedia not all articles will be of interest to a recipient, and an article on a topic of interest might or might not contain information the individual is looking for. This relevance might not be readily apparent. For example, an article might claim that a drug is generally safe, but fail to note that the drug is dangerous for a small percentage of the population with a particular medical condition that happens to include the recipient. A related assumption in the standard case is that the testimony presented by the provider will be understood by the recipient. This same assumption cannot be made in the case of Wikipedia testimony. A more specialized article will require a higher level of subject expertise, and different assumptions will be made regarding the recipient's prior knowledge. Depending on the level of specialized knowledge incorporated into an article, recipients will be differently positioned as to their ability to understand a particular instance of Wikipedia testimony.

This section has defined Wikipedia testimony as a statement obtained by a recipient from a provider via a Wikipedia article according to the norms and practices of Wikipedia, and provided some insight into the components of this definition. This will serve to answer the first question

posed at the beginning of this chapter, namely, what constitutes testimony in the Wikipedia

environment, and what are the factors that must be considered when discussing Wikipedia

testimony?

5.3 Testimony and Critical Thinking

The next chapter will explore the application of theories of testimony to critical thinking

theory. Before looking to testimony as a potential source for critical thinking theory, it will be

useful to explore the relationship of the situation in which critical thinking is practiced to the

situation to which the theory of testimony is directed. Testimony addresses the situation where a

recipient receives testimony from a provider. Critical thinking, on the other hand, addresses the

situation where an individual evaluates a statement from a source. The wording used to describe

these situations differs, and the theoretical perspective of the epistemological theories of testimony

differs from the practical perspective of critical thinking. Does this imply that the two enterprises

are discussing different situations, or do they offer different perspectives on the same situation?

The answer to this question will have a direct bearing on how theories of testimony can be applied

to critical thinking theory.

5.3.1 Standard Case in Testimony and Critical Thinking

The previous sections characterized Wikipedia testimony according to a definition

derived from a general definition of testimony that was in turn extrapolated from a definition of

standard case testimony derived from the literature on testimony. In order to work out the

potential application of testimony to critical thinking this section will compare the standard case in

testimony to what can be characterized as the "standard case" in critical thinking.

As set out in Chapter 4, the standard case of testimony consists of a statement obtained

by an individual from another individual via an oral conversation according to the norms and

practice of conversation. Although there is no explicit "standard case" characterization in the

critical thinking literature, textbook authors often refer to conversations with individuals as

sources. Ennis (1987), for example, refers to a source in his criteria as "the person" (p. 10) and

Hitchcock (1983) speaks in terms of a person making a claim (p. 202). Fisher (2001) speaks of a "person/source" making a claim (p. 93), and while he does talk about sources other than persons he often speaks of a source as a person. Although the textbooks do look at other examples, they do not do so in a systematic manner. The situation most commonly advanced in these examples is a conversation between two individuals—a source and a critical thinker who is evaluating the source. As there are no substantial differences between this situation and the standard case of testimony, the critical thinking discussion of sources and the epistemological study of testimony can be seen to address the same case. In the vocabulary of testimony this is a conversation between the provider and the recipient involving a statement, and in the vocabulary of critical thinking this is a conversation is between the source and the critical thinker involving a claim. Because these standard cases are sufficiently similar the terms "provider" and "recipient" from the vocabulary of testimony will be applied to the critical thinking context as well, and the term "statement" from the vocabulary of testimony will be applied to a claim in the critical thinking context.

5.3.2 Complex Sources in Critical Thinking and Testimony

The restated critical thinking criteria in Chapter 2 were originally set in the context of the standard case. As the evaluation of Wikipedia according to these criteria in that chapter suggests, and the more detailed evaluation of Wikipedia according to the same criteria in Chapter 3 bears out, applying these criteria to a source like Wikipedia is problematic. It was suggested in Section 3.3.5 that the underlying issue that makes this evaluation so difficult is Wikipedia's complexity. This chapter has shown how the standard case of testimony can be extended to a complex source like Wikipedia. The suggestion here is that the complexity of Wikipedia that confounded the application of the restated critical thinking criteria in Chapters 2 and 3 can be better understood by considering Wikipedia as a case of testimony.

According to the definition of testimony set out in Section 5.2, testimony takes place between a provider and a recipient in a particular discourse event according to the norms and practices of that normative discourse context. When critical thinking is discussed using the

vocabulary of testimony the role of the critical thinker corresponds to the role of the recipient. However, the source in critical thinking encompasses not only the testimony provider, but other contextual factors such as the discourse event and the normative discourse context. The standard case is set in the normative discourse context of conversation where the norms and practices of conversation are assumed. However, even in conversation the critical thinker must attend to this context as well as to the provider when evaluating a source. For example, John might be willing to follow directions received from a police officer in the course of a normal unrushed conversation, but not if the police officer, in a hurry, had responded to John's query with a quick over the shoulder reply, leaving John unclear that his question had been understood. The change in context would not affect John's evaluation of the police officer as a provider, but would affect John's evaluation of the source of testimony when the source includes the context as well as the provider. The provider has not changed, but the conversational normative discourse context has changed, and the norms and practices of this type of conversation differ from the norms and practices of normal conversation. Consequently, a critical thinker must take the context as well the provider into consideration when evaluating a source.

It should be noted that under this analysis of the situation the normative discourse context has changed from "conversation" to "conversation in a hurry" and that the norms and practices of "conversation in a hurry" were not violated. An alternative analysis might find that this example is an instance of conversation in which the norms and practices of conversation were violated. Under either analysis, the main point is that critical thinking needs to pay attention to the normative discourse context and to the norms and practices of that normative discourse context.

5.4 Testimony and Critical Thinking Theory

Three issues were identified at the beginning of this chapter that need to be resolved before proceeding to examine the application of theories of testimony to critical thinking theory. The first such issue, the relationship between the standard case of testimony and Wikipedia, was dealt with in Section 5.1. The second issue, the relationship between testimony and critical thinking practice, was dealt with in Section 5.2 The third issue, the relationship between

testimony and critical thinking theory, will be dealt with in this section. While the next chapter

will delve into that relationship in detail, it is important to clarify exactly what the problem is with

critical thinking theory, and what contribution might the theories of testimony make to a solution

of that problem.

The problem identified in Chapter 2 with critical thinking theory has to do with its

relation to critical thinking practice. As set out in that chapter, the problem is a gap between

Siegel's epistemology of critical thinking and critical thinking practice. This section will re-

examine Siegel's epistemology, and determine exactly what is being asked of theories of

testimony with respect to critical thinking theory and Wikipedia testimony.

5.4.1 Rationality, Truth, and Regulative Ideals (Siegel Revisited)

Siegel's epistemology of testimony was identified in Chapter 2 as the most well-

developed theory of critical thinking in the critical thinking literature. Although Siegel's

epistemology is criticised in the literature, that criticism was not considered to be of sufficient

impact to reject his account. However, it was noted that Siegel's epistemology provides

justification for the critical thinking enterprise, and not a guide to critical thinking practice itself.

The critical thinking textbooks examined in Chapter 2 set out critical thinking practice in terms of

critical thinking criteria. Section 2.4 identified a gap between Siegel's epistemology of critical

thinking and this criteria-based critical thinking practice. A need was identified for theoretical

guidance to aid in the identification and application of critical thinking criteria, and the defence

Siegel provides of the critical thinking project does not provide this guidance. The critical

thinking theory that will be developed from theories of testimony is not intended to replace

Siegel's epistemology. Rather, Siegel's epistemology will provide the context for a testimony-

based theory of critical thinking, which in turn will address critical thinking practice rather than

the enterprise of critical thinking itself.

To better understand the gap between theory and practice, a review of Siegel's

epistemology of critical thinking is in order. Critical thinking, Siegel (1988) maintains,

is best conceived ... as the educational cognate of rationality: critical thinking involves

bringing to bear all matters relevant to the rationality of belief and action; and education

aimed at the promulgation of critical thinking is nothing less than education aimed at the

fostering of rationality and the development of rational persons (p. 32).

For Siegel, rationality is characterized by epistemic considerations rather than by a particular

thinking process. To think rationally is to hold beliefs based on good reasons. These good

reasons provide justification for beliefs, and beliefs held on the basis of good reasons are more

likely to be true than those that do not have this support. Thus, "while we aim at truth, we

determine truth value by engaging in inquiry and assessing justificatory status: is there good

reason to regard the proposition in question as true" (2005b, p. 353).

Siegel (1989a) claims that truth and justification are independent, and that critical

thinkers do not have direct access to truth. For Siegel, "it can be rational to believe that q even if q

is false. The rationality of believing q is independent of q's truth" (p. 130). Despite this

independence of good reasons and truth, Siegel (1989a) claims that the best way to obtain true

beliefs is to hold beliefs that can be rationally justified. "We have no immediate or privileged

access to the truth; we 'get at' the truth by assessing warrant. We take justification to be a sign of

truth" (p. 137). As justification for a statement points to the truth of the statement, and "truth thus

functions for us, as Kant might say, as a *regulative ideal*; the *upshot* of justification is a prima

facie case for truth" (p. 137). A critical thinker is to seek justification, or good reasons, for

holding beliefs to be true. When it comes to practice, "the theory of critical thinking … must

regard critical thinking as aiming at rational justification rather than truth" (Siegel, 1992a, p. 104).

According to Siegel (1992b), the epistemology of critical thinking should address the role

rather than the identification of good reasons.

Epistemology's task is not to decide what in fact is a good reason in history, physics, or

indeed any particular disciplinary context; it is rather to theorize about the nature of

reasons, and their goodness, such that a good reason in one context bears the same

relation to that for which it is a reason as a good reason in another context bears to that

for which it is a reason (p. 270).

He goes on to say that the "huge project of specifying what counts as a good reason in all disciplinary contexts or discourse frames [is] perfectly legitimate, albeit enormously ambitious and to a large extent extra-philosophical" (1992b, p. 271). Although epistemological considerations are not sufficient to identify good reasons, epistemological considerations do determine what makes a reason "good" and the role that good reasons play in critical thinking practice.

Siegel (1992b) also maintains that in order to be rational, judgement concerning good reasons should be based on criteria. "Any particular judgment must admit of criterion-based evaluation, however fallible … Any view which denies this fails as a view of rational or reasonable judgment" (p. 277). These criteria will vary between fields, and the critical thinker working in a particular field should become acquainted with criteria for good reasons that hold in that field. However, awareness of criteria alone does not make a critical thinker. The critical thinker also needs to be aware of how good reasons should be used. That is, the critical thinker needs to understand not only the general nature of good reasons, but "the fact that good reasons in different fields, singled out as good by different field-relative criteria, nevertheless stand in the same relation to the beliefs they support despite their being singled out by disparate criteria" (Siegel, 1985, p. 76). Criteria help the critical thinker make judgement as to whether or not reasons for supporting a particular belief or statement are good, and to evaluate whether or not those reasons provide sufficient support for the statement.

Siegel's epistemology of critical thinking is not detailed, and addresses, in broad stokes, the connection between critical thinking, rationality, and education. To summarize, the main points of Siegel's epistemological theory are: 1) the use of good reasons is necessary for, and in fact constitutive of, critical thinking, 2) justification consists of good reasons, 3) although truth and justification are independent, beliefs that have the support of good reasons are more likely to be true than beliefs that do not have that support, and 4) judgements concerning good reasons should be based on criteria. Siegel's epistemology provides a foundation for the critical thinking project, specifying that judgements regarding statements or beliefs should be made on the basis of good reasons, and that determination of whether or not a reason is good should be made according

to established criteria. However, this theoretical support does not extend to the selection and application of those criteria, nor did Siegel intend to provide this support.

The contention here is that although the selection and application of specific criteria cannot be made on the basis of critical thinking theory alone, theory should be able to provide support for this selection and application. The further contention, which will be explored in the next chapter, is that epistemological theories of testimony can be used to develop a theory of critical thinking as these theories of testimony speak in terms of justification for statements.

5.5 Chapter Summary

Three issues were set out at the beginning of this chapter that needed to be addressed before theories of testimony could be applied to critical thinking theory. The first issue was around the relationship between the standard case of testimony and Wikipedia testimony. This chapter found that there are significant similarities as well as differences between the standard case of testimony and Wikipedia testimony. Both types of testimony focus on individual statements, and both posit individuals as testimony recipients. The primary differences between Wikipedia testimony and the standard case are the increased complexity of the normative discourse context in which the testimony is positioned, and the complex nature of the testimony provider. Despite these differences, both the standard case and Wikipedia case can be viewed as instances of the general case of testimony. A side benefit of this general model of testimony and the subsequent discussion is a framework for the analysis of a source. This framework can be used by a critical thinker when analyzing a source whether or not statements from that source are being evaluated according to a particular set of critical thinking criteria.

The second issue was around the relationship between testimony and critical thinking practice, and how the case to which testimony is addressed compares to the case to which critical thinking practice is addressed. The conclusion is that both testimony and critical thinking practice address the same general case from different perspectives, and that the standard case of testimony and the standard case of critical thinking are essentially the same case.

The third issue was around the relationship between the theory of testimony and critical thinking theory. Siegel's foundational theory of critical thinking, initially examined in Chapter 2, was reviewed. The conclusion in that chapter was that Siegel's foundational theory for critical thinking theory provides theoretical support for the critical thinking project itself, but that this support does not translate into theoretical foundations for the selection and application of critical thinking criteria. The contention here is that this guidance can come from the epistemology of testimony and the various theories of testimony put forward in that literature. These theories will be explored in the next chapter.

6. THEORIES OF TESTIMONY AND CRITICAL THINKING

This chapter will review the epistemological theories of testimony examined in Chapter 4 to determine how those theories can be used in the formulation of a foundational theory of critical thinking. The first section of this chapter will identify elements of those theories that are potentially applicable to critical thinking, and the second section will bring these elements together and propose a preliminary testimony-based theory of critical thinking. Additional issues raised in the course of developing this theory will be addressed in Chapter 7, and attention will be turned to actual criteria in Chapter 8.

Theories of testimony differ on, for example, what features constitute testimony, or on which features are fundamental and which are derivative. It might be objected that insights from different theories of testimony cannot be combined if the theories are in conflict. Although these differences are of significance to the philosophical questions raised in the literature, the purpose of a theory of critical thinking for the present investigation is not to answer these questions or to resolve the resulting disputes. Rather, the task will be to determine what insights that literature can provide into the testimonial process and the evaluation of testimony that can inform a theory of critical thinking which, in turn, can be applied to critical thinking practice. Insights can be drawn from different and potentially conflicting theories as long as those insights themselves are not in conflict. Differing theories, when possible, will be interpreted as providing different perspectives on the process of accepting testimony. For example, indirect reductionism can be characterized as an account of testimony where it is incumbent on the recipient to have evidence that the provider is trustworthy, while the assurance view can be characterized as an account of testimony where the assurances of the provider serve as evidence that the provider is trustworthy. The analysis that follows will not focus on the conflicts between these theories, but on how these theories can be applied to critical thinking.

6.1 Evidential and Social Theories of Testimony

The review of the literature in Chapter 4 provided a taxonomy for theories of testimony that grouped the various theories into three general types: Evidential accounts, social accounts,

and descriptive accounts. This chapter will investigate what the evidential and social accounts of testimony have to contribute to the theory of critical thinking. Descriptive accounts, which focus on the psychological process of testimony acceptance, will not be investigated further. These accounts are descriptive rather than normative in nature, and do not provide guidance as to which courses of action should be taken and which avoided in regards to testimony acceptance.

This section will identify elements of the evidential and social accounts of testimony that are potentially applicable to critical thinking theory, and can be used to develop a testimony-based theory of critical thinking. This testimony-based theory of critical thinking will be constructed in the context of Siegel's epistemology of critical thinking. As noted in the previous chapter, Siegel's epistemology holds that critical thinking involves the identification of good reasons for accepting statements. While Siegel discusses the role of good reasons in critical thinking, he does not move on to the next step of how to identify and apply good reasons in critical thinking practice. The proposal here is that the theories of testimony that will be examined can be used to develop a theory of critical thinking that addresses these two questions. This proposed testimony-based theory will provide guidance for the selection of critical thinking criteria that identify good reasons, and for the application of these criteria by a critical thinker. As such, the examination of the theoretical accounts of testimony will identify types of reasons or "reason types" (RT) for accepting testimony, principles (PR) that can guide critical thinkers when applying various types of reasons in the process of critical thinking, and other concepts that can be used in the application of these reason types or principles. A more complete discussion of these reason types and principles will follow in Section 6.2.

6.1.1 Evidential Accounts of Testimony

Evidential accounts of testimony are defined in terms of the evidence required to support testimony. These evidential accounts are of three types: reductionist accounts, anti-reductionist accounts, and hybrid accounts that attempt to combine features of reductionist and anti-reductionist accounts. As noted in Section 4.2, reductionist accounts hold that in order to be justified in accepting testimony the recipient is required to obtain evidence for that testimony.

Two different approaches to this justification were determined. Direct reductionism holds that justification consists of evidence for the testimony itself, and indirect reductionism holds that justification consists of evidence that the source of the testimony is reliable.

Direct reductionism is largely rejected in the literature as it is recognized that recipients are seldom in possession of the direct evidence for testimony that direct reductionists require. Although theories of this type cannot fully account for critical thinking practice, they do include some concepts that are potentially applicable to critical thinking. First, direct reductionism calls for the recipient to have reasons in support of the testimony itself, thus resulting in the first type of good reason or source of support for a statement:

 RT1: Support for the statement itself.

Adler is one of the few writers on testimony who advocate direct reductionism. His theory has additional features of potential use to critical thinking that are common to other theories of testimony that are not reductionist in nature. One of these features is Adler's (1994, 2002) advocation of monitoring. A recipient, according to him, should *monitor for defeaters* rather than actively obtain a certain level of positive evidence for the statement in hand. He also differentiates between *entitlement* and *justification*, claiming that monitoring provides an initial entitlement that falls short of full justification. This suggests the first principle of critical thinking:

PR1: The critical thinker should monitor appropriately for potential defeaters.

According to *indirect reductionism* testimony can be accepted if the recipient ascertains that the provider is credible. Indirect reductionism thus calls for the critical thinker to have reasons in support of the credibility of the source at the time that the testimony is received from the source, thus resulting in the second type of good reason, or source of support for a statement:

RT2: Support for the credibility of the statement's provider.

As noted in Section 4.2.1, E. Fricker's account (1987, 1994, 1995, 2006) can be considered representative of the indirect reductionism position. Fricker, like Adler, advocates monitoring, but unlike Adler, Fricker considers monitoring to be an active process, and maintains that the recipient should monitor the *provider* rather than the *testimony itself*. The recipient is to be alert for signals regarding the provider's sincerity and competency, and defeaters arise if this monitoring suggests reasons to doubt the provider's reliability. From the critical thinking perspective it is unclear if there is any real difference between active and background monitoring. The main point of monitoring in both cases is to ensure that defeaters are brought to the recipient's attention. For the critical thinker the main difference between the two accounts is where to look for defeaters—testimony itself in the direct reductionist case, and the provider in the indirect reductionist case. Indirect reductionism, like direct reductionism, thus supports the first principle of critical thinking PR1: The critical thinker should monitor appropriately for potential defeaters.

According to *anti-reductionist* accounts of testimony, beliefs obtained via testimony are to at least some extent justified simply by the fact that they are so obtained. In other words, the recipient, by receiving a statement via testimony in normal circumstances (i.e., where there are no defeaters, or anything to indicate that there are problems with the testimony), is entitled to accept that statement, and that initial entitlement does not require the support of independent evidence. Although these anti-reductionist accounts are classified as evidential accounts in that they are couched in terms of evidence, they either address the case where evidence is lacking and put forward Davidsonian type arguments for the overall reliability of testimony, or make the claim that testimonial knowledge is on par with IPM knowledge (knowledge obtained via introspection, perception, and memory) and requires no more justification for the initial acceptance of statements than do statements that originate from introspection, perception, or memory. While the reductionist accounts suggest reasons to accept the particular statement being evaluated, anti-reductionist accounts give the critical thinker reasons to maintain a propensity to accept rather than reject testimony. This provides a third type of reason for support of a statement offered as testimony:

RT3: Support for accepting testimony in general.

Anti-reductionist accounts hold that when an individual has no evidence for or against testimony, the individual should accept rather than reject that testimony. Anti-reductionists such as Burge (1993) admit that individuals are seldom in the situation where they have no evidence at all regarding a particular statement, and that in many if not most cases the individual has reasons of some sort to either support or reject that statement. However, the arguments Burge and the other anti-reductionists pose do provide support at least an initial *ceteris paribus* (i.e., all else being equal) presumption in favor of accepting rather than rejecting a given instance of testimony. This *initial presumption* in favor of acceptance claimed by the anti-reductionist accounts of testimony suggests that a critical thinker does not require positive evidence in order to accept a statement. Rather, all that is required is the absence of negative evidence. This suggests the following principle:

PR2: The critical thinker should accept a statement in the absence of defeaters.

Burge's Default Position does not address monitoring, and it might be thought that the requirement to monitor differentiates reductionist and anti-reductionist accounts, with reductionists claiming that monitoring is required and anti-reductionists claiming that initial entitlement does not presuppose monitoring. On closer examination this distinction is hard to make. As noted in Section 4.2.1, Goldberg and Henderson (2006) argue that E. Fricker's indirect reductionist account, which requires active monitoring of the provider, is actually an anti-reductionist account as the recipient holds entitlement without having to produce evidence. Coady (1992), an avowed anti-reductionist, does not explicitly discuss monitoring, but does note that both the cohesion of information from various sources (perception, memory, inference, and testimony) and coherence (integration of the testimony with the recipient's prior beliefs) are background elements of the belief acceptance process. In order to establish that the recipient is

indeed in the default position, it would seem that some evaluation of the situation is required on the part of the recipient, and that monitoring of some sort would be needed to determine if and when the default position no longer applies. Although the accounts of monitoring put forward by the indirect reductionists such as Fricker and anti-reductionists such as Coady differ in detail and are motivated by different philosophical perspectives, the practical implications are similar. As a result, from the critical thinking perspective, these accounts can be viewed as presenting two different aspects of the same monitoring process rather than two different types of monitoring. The upshot in both cases is to place an onus on the recipient to monitor for potential defeaters if the recipient is to gain entitlement beyond the basic entitlement that Burge's default position provides, and can be seen to indirectly, if not directly, support PR1: The critical thinker should monitor appropriately for potential defeaters.

Another potential contribution of the anti-reductionist accounts to critical thinking is the distinction that these accounts make between entitlement and justification. Although some reductionist accounts make a general distinction between entitlement and justification, anti-reductionist accounts, in their disagreement regarding the amount of entitlement that the initial presumption grants, make the distinction more nuanced. Strong anti-reductionism, such as that proposed by Burge, holds that the recipient is justified in accepting the statement pending defeaters. Weaker forms of anti-reductionism, such as those proposed by Pritchard and Graham, only grant the recipient an initial entitlement to hold the statement, but do not consider that entitlement sufficiently strong to constitute full justification. For example, Graham (2006a) argues that the default position provides *prima facie pro tanto* (at first view, to that extent) justification, which holds that testimony can be accepted "all things being equal," rather than an unqualified Burge-like *a priori* or "on balance" justification. On Burge's view the default position provides sufficient justification, whereas on Graham's view the default position provides some justification, with full justification pending further investigation. Pritchard (2004) claims that the initial entitlement provided in the default position does not in itself constitute justification, and that justification additionally requires an externalist account of testimony as a reliable process.

While one issue around the general issue of justification has to do with how much entitlement a reason, or reason type can provide for a recipient, another issue has to do with the locus of the justification or entitlement. Although the reductionist and anti-reductionist accounts vary regarding the need and type of justification that they claim is necessary for testimony, they all locate this justification with the recipient. Hybrid accounts, by contrast, divide the total justification the recipient requires between the provider and the recipient. These accounts differentiate between "holding justification for *p*" and "being justified in accepting *p*" where at least some of the justification is held by the provider. Hybrid accounts should not be confused with indirect reductionist accounts, which maintain that a recipient is fully justified in accepting a statement as long as the recipient holds justification for the provider's reliability and competence. The difference between these two types of accounts extends not only to the locus of justification, but to what reasons contribute to justification. The indirect reductionist considers it sufficient for the recipient to have good reasons to consider the provider to be credible, while the hybrid account considers the reasons the provider has in support of the statement to also be necessary for justification. Under indirect reductionism, a recipient who justifiably considers the provider reliable will be justified even if the provider does not hold justification for the statement, while the hybrid account would not consider the recipient to be justified in the same situation.

There is nothing in the hybrid account to suggest that the critical thinker's responsibilities would be different from what they would be according to an indirect reductionist account. However, the hybrid view's extension of justification to include good reasons that the recipient does not possess does give a different view of justification. While the critical thinker cannot be expected to judge a statement based on reasons that are not available to that critical thinker, the hybrid account does re-emphasize the importance of reasons that are beyond the recipient's grasp.

While these approaches to justification do not support a separate reason type or principle for critical thinking, they do provide concepts that will be useful in the application of the various reason types and principles, and will be discussed further on in this chapter.

6.1.2 Social Accounts of Testimony

The second general type of testimony identified consists of accounts that rely on social factors of some sort. These include the assurance view, genealogical accounts, reliabilism, and other accounts that refer to social norms and practices.

As noted in Section 4.3.1, assurance accounts claim that testimony is trust based rather than evidence based. Questions of truth can arise only in discourse that is conducted according to certain standards and norms of correct usage, and testimonial justification does not depend on evidence for the testimony, but on whether or not the testimony was presented according to these standards and norms. A provider has a responsibility to present testimony in accordance with these standards and norms, and a recipient has an equivalent responsibility to accept testimony so presented. The provider is responsible for the truth of a statement, while the recipient relies on the provider's *assurance* that the statement is true rather than on evidence regarding the provider's reliability. Not every potential provider of testimony should be unquestionably trusted, and when it is appropriate to enter a trust-based relationship depends on social norms.

In the critical thinking context, some recipients might be entitled to trust some providers (e.g., a child might be entitled to trust a parent), but for a critical thinker, this trust can only provide an initial entitlement, or reason to accept the statement. As with evidence-based accounts, defeaters might arise that call into question either the trusted provider or a particular instance of that provider's testimony. While assurance accounts might be of limited applicability to critical thinking, they do point to non-evidential social factors that might play a part in the critical thinking process. In particular, they highlight the role of social norms.

Social norms are also essential to Dewhurst's (2009) communication-based account of testimonial justification. Her claim is that if a speaker intends to communicate, and a recipient recognizes that intention, then the recipient's entitlement to accept the provider's communication is not based on trusting the speaker, but on the nature of communication. A provider attempting to assert information or communicate information to a recipient will, due to the nature of communication, be sincere. If a recipient recognizes this intent to communicate, the sincerity of the speaker can be assumed and the recipient is entitled to accept the speaker's testimony on that

basis. Of course, not all attempts to convey information are genuine communication in this sense, and the recipient will need to distinguish acts of communication from other acts such as attempts to influence, or convey false information. As with trust based relationships, acts of communication are determined by social norms.

Geneological accounts hold that societies themselves develop in a way that is *conducive* to testimony. B. Williams (2002), who builds on Craig's account (1990), maintains that any society will develop normative epistemic practices that emphasise the virtues of sincerity (asserting truth rather than falsity) and accuracy (due diligence in ensuring the truth of the assertion). Societies develop in such a way that these virtues become engrained in providers. Despite this, providers will sometimes make mistakes or find reasons to assert falsehoods, and Williams does not assume that recipients should accept everything they are told at face value. However, Williams contends that in order to counter any propensity to assert falsehoods, all societies develop mechanisms of some sort for shaming providers who lie or deceive. For the critical thinker, genealogical accounts offer reasons for accepting statements offered in societies that developed social norms that result in a preponderance of true testimony over false. Like reliabilist accounts, they do not guarantee that all testimony should be accepted, but they do provide reasons for initial acceptance.

Faulkner's (2010) distinction between "predictive" and "affective" trust provides a useful way to compare these socially based accounts with other types of accounts. According to Faulker, predictive trust is trust that a recipient places in a source that has demonstrated reliability. Affective trust does not look to reliability, rather, it presumes trust, and this presumption of trust is based on social norms. Assurance accounts rely on affective trust, while reliabilist accounts rely on predictive trust. Genealogical accounts are somewhat of a bridge between these two types of accounts. Genealogical accounts show how societies develop with certain social norms, and these norms ensure the general reliability of testimony delivered in these societies as well as the development of norms that an individual can rely on in order to determine who to trust. These norms and practices apply not only to providers but to recipients, and set out what should be accepted and with what level of acceptance.

These social accounts of testimony provide a fourth type of reason for support of a statement offered as testimony:

RT4: Support for the credibility of the normative discourse context by which the statement was obtained.

One of the issues that will be addressed in Chapter 8 is how this backing provided by genealogical accounts can be applied not only to testimony in general, but to particular normative discourse contexts. Wikipedia is an example of a normative discourse context that can be viewed as an explicitly normative society of the sort described by these genealogical accounts, and this will factor in the evaluation of Wikipedia in Chapter 9.

Reliabilist accounts of testimony hold that there are *reliable processes* in society by which knowledge is transmitted, and if a recipient obtains a statement via a reliable process the recipient is justified in accepting the statement. Advocates of reliabilism include Goldman (1999), and his statement of reliabilism can serve as representative. Goldman holds that a recipient is justified in holding *p* as long as *p* was obtained through a reliable process, independently of whether or not the recipient is aware of that fact. Goldman goes on to argue that many social practices, such as textbook production and classroom education, are examples of reliable processes. Reliable processes are not infallible, but will, on average, tend to produce true beliefs rather than error or ignorance. From the perspective of critical thinking, reliabilism gives reasons for accepting a statement that has been obtained by a reliable process. Although a recipient might be unaware of all the reasons that contribute to the justification of a reliable process, and does not know whether the process's reliability extends to a particular case, that recipient might be aware of the general reliability of the process. This general reliability can be factored into the critical thinker's evaluations of particular cases. To take one of Goldman's educational examples, textbooks are generally reliable, and are so considered by students. Although a student faced with a particular statement in a textbook would not know if the process that produced the statement did in fact produce a true statement in that case, the general reliability of textbooks does provide a

reason to accept the statement. However, that does not mean that the statement should be unquestionably accepted. In general terms, while the reliability of a process provides a reason to accept statements produced by the process, that reason is not sufficient to fully justify acceptance of any particular statement so produced. The questions for the recipient, are how to determine if the process by which a statement was obtained is reliable, and to what extent the reliability of that process should factor into the recipient's evaluation of a particular statement. This gives rise to a fifth type of reason for support of a statement offered as testimony:

RT5: Support for the reliability of the process by which the statement was obtained.

Another approach to testimony that relies on social norms and practices is what M. Fricker (2010) calls the "social practice of proper challenge." According to Fricker an individual should be considered to be an inquirer rather than an examiner. A consequence of this change in focus is that an individual should not have to justify every statement received via testimony. Rather, Fricker maintains that acceptance is the default position, and proper challenges to that position should only arise in cases where those challenges are sanctioned by society. In other words, although individuals are responsible for justifying their beliefs, they are so responsible only in the context of a "social practice of proper challenge," and proper challenges are determined by social, not individual factors. Fricker bases her position on both Craig's notion of a reliable informant and M. Williams's notion of "default and challenge." Craig (1990), as has been seen, claims that societies develop in such a way as to produce reliable informants. According to M. Williams (2008), an accredited epistemic subject (i.e., one who is properly trained and acculturated and is thus reliable from an externalist perspective) is entitled to believe "that-p" without providing justificatory reasons unless challenged. Entitlements, however, are balanced by defence commitments, and if reasonable questions are raised the entitlement ceases until those questions are resolved.

A similar position is held by Freeman (2005), who discusses the acceptability of premises from the perspective of argumentation theory. Any noncircular argument will require premises

that are not proven. There can be either a presumption in favor of the premise or a challenge to that premise. The difference between the presumption and the challenge, Freeman claims, is a normative question of when premises *should* be accepted, and is to be settled by socially accepted norms of discourse and challenge. This question of presumption is contextual, and it is rationally acceptable to hold a statement *p* as a presumption unless the context dictates that *p* should be challenged. Part of this calculation is what Freeman terms the "pragmatic condition," which holds that the cost of mistakenly accepting *p* should not outweigh the cost of obtaining further evidence regarding *p* (p. 62). According to Freeman, presumption of warrant coupled with fulfillment of the pragmatic condition is sufficient to justify acceptance of a statement (p. 65). When applied to testimony, Freeman argues that if a statement is put forward by a proponent who is considered competent to attest to the truth of the statement, there is a presumption for relying on that testimony.

For the critical thinker, these "defend when challenged" positions do not support blind acceptance of any and all statements. Rather, they hold that statements advanced under normal conditions should be accepted unless challenges to those statements arise. Further, they do not hold that any and all challenges are legitimate, but that these challenges must arise for particular reasons. There is thus a balance between *presumption* and *challenge* that does not place undue conditions on acceptance, yet raises challenges when appropriate. Challenges can be viewed as potential defeaters, and this leads to the third principle for the critical thinker to follow:

PR3: The critical thinker should appropriately evaluate the potential defeaters.

6.2 Application to Critical Thinking Theory

As noted at the beginning of Section 6.1, this dissertation follows Siegel, who equates justification with "good reasons." The previous section surveyed theories of testimony and identified several types of reason (RT) that can be used in a theory of critical thinking along with principles (PR) that can serve as guidance for crucial thinkers when applying these reasons types.

This section will begin to develop a theory of critical thinking based these reason types and principles.

6.2.1 Reason Types

While Chapter 8 will provide a more complete discussion of how the reason types identified in the previous section can be used in critical thinking practice, the following will provide a summary of these reason types. Theories of testimony suggest two main categories of types of reasons that, in turn, can be used in support of a statement. The first category identifies reasons that are directly applicable to the particular statement or source that the recipient is evaluating. The main sources for these types of reason in the literature on testimony are the reductionist accounts. These accounts provide internalist accounts of justification, and are couched in terms of justification or reasons that are available to the recipient. This group includes reason types RT1 and RT2:

RT1: Support for the statement itself.

RT2: Support for the credibility of the statement's provider.

The second category identifies reasons that apply indirectly to the target of the evaluation. This group includes reason types R3, R4, and R5. Theories of testimony that suggest these types of reason derive from externalist accounts of testimony, as the recipient does not have direct access to the warrant that they provide. However, they do provide the recipient with reasons that give indirect support for particular statements in the form of support for the process by which the statement was obtained. The first reason type in this group provides indirect support for a statement in the form of reasons to accept testimony in general:

RT3: Support for accepting testimony in general.

Another reason type in this second group provides indirect support for a statement in the form of reasons to hold that the norms and practices of the normative discourse context in which the statement was obtained are conducive to true statements:

RT4: Support for the credibility of the normative discourse context by which the statement was obtained.

The type of support provided by RT4 relies on the distinction between normative discourse contexts, discourse events, and statements. A statement might be obtained via what the recipient considers to be a credible normative discourse context, but the recipient might have no evidence as to whether or not this credibility carries through to the particular discourse event or statement. As a result, reasons for the credibility of the normative discourse context by itself might not, of themselves, be considered sufficient to justify the statement.

The third member of this second group of reason types holds that indirect support for a statement can be garnered when the process by which the statement was obtained is a reliable process.

RT5: Support for the reliability of the process by which the statement was obtained.

In practice, there might be overlap between the reasons provided on the basis of RT4 and those provided on the basis of RT5 as the norms and practices of a normative discourse context might provide reasons for considering processes that conform to those norms and practices to be reliable. For example, the norms and practices of scholarly publishing provide good reasons for considering the scholarly publishing process to be generally reliable. However, the credibility of a given set of norms and practices, and the reliability of processes that follow those norms and practices, are not equivalent measures. For example, a newspaper might reliably report on scientific matters, but the norms and practices of news reporting do not conform to the norms and

practices of scholarly publishing, and the newspaper's articles do not qualify as contributions to the scholarly scientific literature.

In summary, the theories of testimony point out two general ways in which justification, or "good reasons," can be supported for the critical thinker. First, these theories provide support for reasons that are specific to the particular statement that the critical thinker is evaluating. Second, these theories provide support for reasons to believe that a statement was obtained by a credible process, although these reasons do not enable the critical thinker to determine whether the process fails in a particular case.

6.2.2 Critical Thinking Process

The previous section addressed types of good reasons that can be used by critical thinkers. This section will propose a process of critical thinking that can be used by critical thinkers when evaluating a statement with respect to those reasons. The principles (PR) identified in Section 6.1 to guide critical thinking suggest a three-stage process for the critical thinker. This process is best described by examining these principles in a different order than they were initially identified. The first stage of this process sets out the basic attitude that a critical thinker should hold when presented with a statement. That attitude should be one of acceptance rather than rejection:

PR2: The critical thinker should accept a statement in the absence of defeaters.

The normative force of this principle becomes apparent when it is contrasted with alternatives such as "The critical thinker should only accept a statement that is supported by positive evidence." PR2, by contrast, does not require positive evidence, simply a lack of defeaters. If potential defeaters can be addressed, the critical thinker can accept the statement. The question of exactly what constitutes a defeater and how defeaters should be dealt with will be discussed in relation to PR1 and PR3. For the present, the definition given in Section 4.2.2 of a defeater as "a reason to reject the testimony" will suffice.

This principle might initially appear to be antithetical to good critical thinking, which is distinguished by its emphasis on "critical" as opposed to other less rigorous means of accepting statements. Is not the essence of critical thinking to examine everything critically, and insist on support for any statement that is accepted? While a critical thinker should always be prepared to respond to questions about why a statement was accepted, to ask these questions is to elicit a different process than the one that critical thinkers actually use on a day-to-day basis. One of the motivations for epistemological theories of testimony is the fact that individuals do not and need not provide justification for every statement that they encounter and accept. The critical thinker is in exactly this situation, and must, on a day-to-day basis, decide what level of support each statement requires before accepting that statement. This does not mean that every statement should be accepted uncritically, but that a critical appraisal of a statement must include a judgement call of whether or not additional support in the form of good reasons for the testimony is required. If additional support is not required, the statement should be accepted rather than rejected.

It is crucial to note that PR2 does not stand on its own, but must be applied in conjunction with PR1 and PR3. PR2 provides the critical thinker with guidance on how to approach the evaluation of a statement and gives the critical thinker a first point of purchase for that evaluation, which is to accept the statement in the absence of defeaters. The other principles will address how defeaters should be identified, and how to deal with challenges that those defeaters present. PR2 thus sets out a default position for the critical thinking process. It also sets out an endpoint for that process, as it indicates to the critical thinker when that process has been completed and a statement can be accepted.

Although PR2 defines a default position, the critical thinker's responsibility is not fully discharged on the basis of that principle alone. A number of the accounts of testimony call for the recipient to monitor the discourse event for defeaters. This brings up the second stage in the critical thinking process, which derives from principle PR1:

PR1: The critical thinker should monitor appropriately for potential defeaters.

Two types of monitoring are advocated in the literature on testimony—monitoring the testimony itself, and monitoring the source of the testimony. These represent, respectively, the direct reductionist and indirect reductionist positions. Exactly how this monitoring should take place will be examined in Chapter 8 where specific criteria for critical thinking will be set out. Once identified, potential defeaters constitute challenges to the testimony. The third stage in the critical thinking process is to deal with these challenges, and derives from principle PR3:

PR3: The critical thinker should appropriately evaluate the potential defeaters.

The notion of "default and challenge" brought up in Section 6.1, which involves determination of what constitutes an appropriate challenge to a statement, can be used by the critical thinker when evaluating defeaters. When presented with a potential defeater, the critical thinker must first determine if the challenges posed by that potential defeater require a response. Some defeaters will present challenges that are immediately successful and the statement will be rejected. Some of the other challenges will not require further consideration, and some will require a response. The critical thinker needs to determine what constitutes an appropriate response to these latter challenges. Successful responses to challenges constitute good reasons for accepting the testimony, and challenges that are not met with a successful response will constitute good reasons for rejecting the testimony.

As an example of a critical thinker responding to defeaters, consider a variation of the case of John at Grand Central Station. In this case, John asks for directions to the Empire State Building from a police officer at Grand Central Station and is told "uh, it's south of here." John believes the police officer to be knowledgeable of the area, and attributes the manner in which the directions are phrased to the officer's off-hand way of putting them. On his way out the building John passes a film crew filming a crime drama, and thinks "was that a real police officer or an actor?" This constitutes a potential defeater, as an actor might not have the familiarity with New York that a police officer would. If the directions had been clear and delivered in a manner that implied confidence John might decide that this potential defeater does not pose a challenge that

needs to be addressed. However, the manner in which the directions were given could be interpreted as uncertain as opposed to off-hand. As such, the potential defeater ("was that a real police officer or an actor?") might present a challenge that requires a response, and John might ask the film crew if the person is an actor or not. Alternatively, John might consider the defeater to be not only potential but successful, thus causing John to dismiss the answer and ask for directions from someone else.

The epistemology of testimony can thus inform a critical thinking process that provides guidance regarding what justification, or support, a statement should require, and if that justification constitutes good reasons for accepting the testimony. In summary, the critical thinker is granted an initial presumption to accept a statement in the absence of any initially apparent defeaters (PR2), but also has a responsibility to monitor for defeaters (PR1) and respond in an appropriate manner to those defeaters and any challenges that they present (PR3). If the challenges require response, the response will incorporate good reasons of some sort. Chapter 8 will examine the application of these principles along with the reason types (RT) identified in the previous section to critical thinking practice.

6.2.3 Entitlement, Warrant, and Justification

The discussion of the theories of testimony in Section 6.1 also highlighted the various positions that those theories take on entitlement in its various forms, including justification and warrant. These theories of testimony, as well as Siegel's theory of critical thinking, fall into the epistemological tradition that defines knowledge as "justified true belief." Justification, in this tradition, can be of two forms. Internalist theories claim that the justification an individual can have for holding a belief must be available to that individual. Externalist theories take the position that an individual can be justified in holding a belief in cases where that justification is not available to the individual. The term "warrant" is often used for this external form of justification, with the term "justification" reserved for internal justification. Some writers in the epistemology of testimony, especially those discussing hybrid accounts, talk about the justification held by the recipient and justification held by the provider, but most use some term that distinguishes the

justification held by the recipient from some other type of warrant or entitlement. Lackey, for example, uses the term "justification/warrant" in her hybrid account (2008).

While these different forms of justification underlie the reasons types identified in Section 6.1, two additional implications of these notions of warrant and justification for critical thinking will be highlighted here. First of all, some theories of testimony, particularly the anti-reductionist accounts, differentiate different types or levels of warrant. In some cases the total entitlement a recipient has for accepting a belief falls short of full justification, and in other cases this entitlement provides full justification. The fact that theories of testimony allow for different levels of entitlement suggests that a theory of critical thinking based on these theories of testimony can also admit degrees of entitlement. In practice, this means that there is nothing in the underlying theory to prohibit a statement from being acceptable to a critical thinker in one situation but not another, or to one critical thinker but not to another. This notion will be further explored in the next chapter.

Another concept of potential practical application to critical thinking is the notion of external warrant espoused by hybrid accounts of justification. Hybrid accounts hold that the justification for a statement can be split between the provider and the recipient, and that a provider can hold reasons in support of a statement that the recipient does not. This provides an avenue for a recipient to explore when responding to challenges—the recipient can ask the provider for reasons that the provider holds.

6.3 Chapter Summary

This chapter has used insights from literature on the epistemology of testimony to develop a preliminary theory of critical thinking that falls in the context of Siegel's epistemology of critical thinking. The result is the identification of five types of good reason (RT1-RT5) along with a three stage process (summarized in principles P1-P3) to guide critical thinkers when evaluating statements. In general, theories of testimony suggest or provide backing for Reason Types (RT), while Reason Types provide support for good reasons. These "good reasons" will be used to develop criteria for critical thinking in Chapter 8, and Chapter 9 will demonstrate the

application of those criteria and the critical thinking process that guides their application to the two examples from Wikipedia initially set out in Chapter 2.

Before these criteria can be set out, there is one aspect of the proposed theory of critical thinking that needs to be addressed. According to the approach set out in this chapter a critical thinker should undertake "appropriate" monitoring to identify defeaters, determine which of these defeaters constituted "appropriate" challenges that require response, and meet these challenges with an "appropriate" response. This response should be in the form of good reasons, and while a number of types of good reason were identified, the matter of which good reasons might constitute an appropriate response has not been addressed. A more complete theory of critical thinking would provide some guidance regarding the notion of appropriateness and how to account for appropriateness in critical thinking. What monitoring is appropriate, what and when are challenges appropriate, and what "good reasons" constitute an appropriate response to a particular challenge? These issues will be explored in more detail in the next two chapters.

7. PRAGMATICS OF CRITICAL THINKING

The previous chapter proposed a testimony-based theory of critical thinking consisting of a process for a critical thinker to use when evaluating a statement along with a number of types of good reason to support a statement that could be used in this process. The notion of "appropriateness" was invoked at the various steps of the process, and this chapter will develop a concept of "appropriateness" that will enable the application of this theory to be applied to critical thinking practice.

The notion of appropriateness is associated with the situation of the recipient. Critical thinking leads to a particular decision to act or believe, and a critical thinker needs to take into account the situation in which that decision is made. For example, a student exploring a medical topic for a class paper might accept statements from a source that a medical practitioner would not use. This chapter will explore the implications of situation on a critical thinker's decision in more detail. One way to do this is to examine contextualism, an epistemological position that accommodates context and advocates standards that are relative to context. The contextualist thesis offers a particular solution to a dilemma that arises when knowledge claims are thought to be dependent on the situation in which they are made. The task here is not to determine if the contextualist response to this philosophical dilemma is correct, but to view the dilemma from the perspective of a critical thinker and see what insight this might give on how the critical thinker's situation should be accommodated in the critical thinker's decision.

7.1 Contextualism

Epistemic contextualism is the contention that whether or not an individual knows something depends in some way on context. Trivial forms of contextualism can easily be set out. For example, where "R" is an individual and p is a statement, the contention that the truth of the statement S: "R knows that p" varies if either R or p change is not controversial—one individual might know something that another does not. Other types of contextualism, however, are more interesting and controversial. The contextualist position of most interest in contemporary epistemology is "attributor contextualism" which is defined by Greco (2010) as "the thesis that the

truth-value of a knowledge claim can vary across attributor contexts" (p. 102). According to this view, the statement S: "R knows that p" can be considered to be true in one context and false in another where R refers to the same individual, p is the same statement, and neither the objective facts of the context nor R's justification for p have changed. What has changed is some factor relating to the attribution of the statement's truth value. According to Greco, the form of attributor contextualism usually proposed is "standards contextualism," which holds that the standards for "knows" vary with the attributor context. In other words, the significant change in the context has something to do with the attributor of the truth value, not with other features of the context. The question here is to specify what this "something" is, and how this might relate to critical thinking.

This can be illustrated by a version of a standard example in the contextualist literature, DeRose's (1992) "bank case," which consists of two variations on the same scenario. In the first scenario (C_1) R is debating whether or not to fight the after-work crowds and deposit a paycheck that day or on the following Saturday. R asks if the bank is open on Saturdays, and is told by a friend "yes, I banked there two weeks ago on a Saturday." The second scenario (C_2) is identical except for the additional fact that R must deposit the paycheck by Saturday at the latest; otherwise a large and important check R has written will bounce Monday morning. In either scenario, R believes that the bank is open on Saturday. Assuming that the bank is indeed open Saturday, does R know that p, where p = "the bank is open on Saturday"? The contextualist claim is that stronger justification is required for knowing that the bank is open in the second case than in the first, and that additional evidence is required that there will be no special circumstances on the upcoming Saturday that would lead to the bank's closure that day. The contextualist holds that in case C_1 R knows that the bank is open, and that in case C_2 R does not know that the bank is open (unless R has additional evidence).

The available justification for the statement p and the truth of statement p do not vary between these cases, and the contextualism claim is in regards to the *sufficiency* of the available justification for the statement p given the particular context in which p is being evaluated. In other words, the claim is not that the truth value of "R knows that p" varies because the truth value of p varies, or that the truth value of "R knows that p" varies because the available justification varies,

but that the truth value of "R knows that p" varies because the situations are different, and that the justification in R's possession is sufficient in one case but is not sufficient in the other case. The standards of sufficiency vary according to the situation, and consequently R can be said to know "that p" in one situation and not in the other. What has changed between C_1 and C_2 are not the facts pertaining to p itself, but R's attribution of the R's knowledge claim regarding p. In other words, something has changed regarding R's attitude towards p, and as a result the knowledge claim that R is prepared to make regarding p has changed from C_1 to C_2.

Many epistemologists do not agree with the contextualists' claim that R knows in one case and not in the other. The problem is to find a resolution to the bank case and similar cases that can be captured in purely epistemological terms — that is, in terms of justification, truth, and belief. One such attempt is what Greco terms the "absolutist" approach, which is to claim that R either knows in both cases C_1 and C_2 or does not know in either case. While this approach might be more epistemically palatable, it does not help to explain the difference in sufficiency of justification between the two cases.

A version of this absolutist approach is to view the contextualist dilemma as arising in the first instance from a failure to correctly characterize the judgement that R is making. On this view, R is deciding whether to believe that p is true, not whether p is true. While "p is true" is a knowledge claim, "I believe that p is true" is a second-order claim related to belief. Stronger justification is required for believing that p is true in case C_2 than in case C_1. But the justification required for holding the knowledge claim "p is true" is the same in both cases, and either R knows that p or R does not know that p depending on the justification for p. Other circumstantial considerations, such as how important it is that the cheque is deposited, might affect R's belief that p is true but do not directly relate to justification for the truth of p itself.

Another way of handling the problem is to take what Greco calls the "subject-sensitive invariantist" approach, which Greco attributes to John Hawthorne and Jason Stanley. On this view, the interests of the individual are factored in when calculating the truth value, and the truth value of any statement S: "R knows that p" is invariant. If the context changes, so does p, and the statement S: "R knows that p" is actually S_1: "R knows that p_1" in one context and S_2: "R knows

that p_2" in another context. Thus the statement S_1, which holds in one context, can be held true while the statement S_2, which holds in another context, can be false. On this approach, a proper analysis of the bank case would hold that the statement p differs between the two scenarios, and that p_1 and p_2 go beyond "the bank is open" to accommodate the interests of R in both cases. In case C_1, p_1 is something like "there is at least a low probability that the bank is open Saturday" and in case C_2, p_2 is something like "there is a very high probability that the bank is open Saturday." The result will be that "R knows that p_1" is true while "R knows that p_2" is false. From a standards contextualist perspective, however, this solution circumvents rather than resolves the dilemma, as it changes the statement p that is being evaluated. It also is not helpful from a critical thinking perspective, as the critical thinker (R in this case) is evaluating statement p from R's perspective, and not evaluating some other statement p_1 or p_2 that includes information about that perspective. R is not evaluating R's own interests, but is taking those interests into account when evaluating p.

As mentioned earlier, the purpose here is not to try to resolve the debate about whether knowledge as such is genuinely contextual, but to determine how this situation should be approached from the perspective of a critical thinker. The purpose of critical thinking is to reach a decision on what to do or what to believe. As a result, the critical thinker needs sufficient reasons to make a particular decision. In the bank case, the decision is whether to deposit the cheque Friday or leave it until Monday when it will be much more convenient to do so. A critical thinker might well decide to wait until Monday in case C_1, but to deposit the cheque Friday in case C_2. In the second case there are good reasons for depositing the cheque on Friday that do not hold sway in case C_1. The critical thinker needs sufficient reasons to make a decision on what to do, and what counts as sufficient reasons for ensuring that the cheque is deposited on Friday hold in case C_2 but not in case C_1.

Which additional statements need to be considered depends on the context, and how these statements are evaluated will also depend on that context. What guides the critical thinker's choice of statements to include in the evaluation, and what sets the evaluative standard for this evaluation, depends not just on the facts of the particular situation but on the critical thinker's

interests in the particular situation. In case C_1 R might well consider the statement q: "The bank was open on Saturday a couple weeks ago" to be sufficient justification for statement p: "the bank is open on Saturday." In case C_2 the critical thinker will consider, along with p, the statement p_i "The cheque needs to be in the account when the bank opens Monday morning." This statement p_i represents the critical thinker's particular interest in the situation, and is used by the critical thinker to determine the evaluative standard that the critical thinker will use when evaluating statement p. As such, p_i plays a normative role in the evaluation, and determines which other statements $q_i \wedge q_{ii}$ $\wedge \ldots \wedge q_n$ along with statement q that the critical thinker should consider when evaluating p. These other statements that the critical thinker considers are descriptive statements which will either support p or serve as defeaters for p.

This analysis of the bank case example demonstrates the fact that a critical thinker is often in a situation where more than one statement must be factored into a particular decision. The evaluation of each statement still relies on having justification, or good reasons in support of the statement. However, depending on the context, and on other statements that are taken into consideration, an individual might make a decision on the basis of a statement with a fairly low level of justification. This is arguably what occurs in case C_1. The level of justification for the statement "The bank is open Saturday" is low, but other relevant factors, such as Friday crowds and the option of depositing the cheque the next week, makes the decision to deposit the cheque on Saturday a reasonable decision.

The level of justification that an individual requires for a statement in order to take action on the basis of that statement can vary depending on what other statements factor into the decision. A critical thinker needs not only to accept true statements, but also to refrain from rejecting potentially true statements because the standards for acceptance are set too high. What standards are appropriate depends on the situation. Recall, for example, Reynolds' (2002) account of a tribal lookout that was cited in Chapter 4. In this case, it is best for the lookout to alert the tribe even when the lookout is not completely sure that the threat exists, as it is better to respond to false alerts than not to be alerted to an actual threat. Thus, even though the statement "the enemy

is out there" might receive a very low level of support, other statements such as "the enemy poses an extreme danger" are highly justified and factor into the decision to respond.

7.2 Critical Thinking and Appropriateness

From the perspective of the proposed theory of critical thinking the bank case illustrates one way in which defeaters can arise for a statement, namely, in the form of questions regarding the adequacy of the support for a statement. In the bank case example with statement p (the bank is open Saturday), the same defeater (banks sometimes change their hours) can be raised in both cases C_1 and C_2. This defeater presents a challenge that requires a response in case C_2, where it is critical that R deposits the cheque on Saturday, but not in case C_1, where depositing the cheque on Saturday is not a critical matter. To meet the challenge presented by this defeater in case C_2, additional support for p is required. This support might take the form of, for example, phoning the bank to determine if it is indeed open on Saturday.

As another example of the way that defeaters can arise, consider three individuals, Tom, Mary, and George, who get up in the morning and are contemplating going for a walk. They each turn on their radios and hear the announcer make the statement q: "The air quality level is at the 'Unhealthy for Sensitive Groups' level." Having no reason to doubt the report, they each consider q to be highly justified. In terms of the model of critical thinking proposed here, q presents a potential defeater to the statement t: "Environmental conditions today are good for walking." Tom checks to make sure it is not raining outside, but as he does not have any health concerns he does not take q into consideration when making his assessment of statement t and decides to go for a walk. In critical thinking terms, Tom does not consider q to constitute a potential defeater for t, or if he does consider q to be a potential challenge to t, he does not consider that challenge to be sufficiently strong to require a response. Mary is asthmatic, and considers statement q_i: "Asthmatics are classified as a sensitive group with respect to air quality" along with statement q when assessing t, and as a result, decides not to go for a walk. George suffers from migraines, and while he has heard from follow sufferers that poor air quality can trigger migraines, he is not aware of any scientific evidence to support statement q_{ii}: "Migraine suffers are classified as a

sensitive group with respect to air quality." Unlike Mary, George decides to go for a walk. Despite his susceptibility to migraines, he does not consider q_{ii} to be sufficiently justified to present a challenge to t. In critical thinking terms, both George and Mary view q as a potential defeater for t. Mary responds to the challenge q presents by adding q_i to her considerations and determines that q_i is sufficiently supported to, in conjunction with q, defeat t. George, considers q_{ii}, but determines that q_{ii} is insufficiently supported and removes it from his considerations. Without q_{ii}, q alone does not defeat t. All three individuals agree on the level of justification for statement q, but make different decisions based on this statement depending on their individual situations and other statements that factor into their decisions. This illustrates a second way that defeaters can arise, namely, in the form of statements that bring additional considerations into a decision.

When a critical thinker is evaluating a statement p, that statement p is seldom, if ever, considered in isolation. Before making a decision based on p the critical thinker needs to determine which additional statements $p_1 ... p_n$ should factor into that decision. The epistemology of critical thinking proposed above holds that criteria for the evaluation of sources can be used by the critical thinker to monitor for, identify, and assess defeaters, and respond to challenges those defeaters present. Defeaters constitute additional information to consider in the evaluation. Successful responses to the challenges these defeaters present can take the form of additional statements that defeat the defeaters, or statements that provide additional provide support for existing statements.

What this epistemology of critical thinking does not do is specify what appropriate monitoring is for a defeater, when it is appropriate to meet a defeater with a response, or when that response is sufficient to defeat a defeater. The remaining question, then, is how to determine what is "appropriate" with respect to monitoring, identifying, assessing, and responding to challenges. This should, first, enable the critical thinker to determine which statements $p_1 ... p_n$ need to be considered when making a decision in a particular situation. This involves determining which statements might be pertinent to the decision and which of these potentially pertinent statements are required to make the decision, or when sufficient pertinent statements are garnered in order to

make the decision. Second, a notion of appropriateness should enable the critical thinker to determine what support those statements need. How important are those statements to the decision, and, as a result what support does the critical thinker require for them?

7.3 Relevance

A critical thinker must make a decision on what to believe or do, and that decision will often depend to some extent on the critical thinker's circumstances. As a result, consideration of the critical thinker's circumstances must be accounted for in any theory of critical thinking. The proposed theory of critical thinking that is based on testimony has used the notion of "appropriate" to account for these circumstances. However, there is nothing in the various theories of testimony that can be used to characterize this notion of "appropriate." The proposal here is that a concept of relevance can be used to characterize the critical thinker's determination of what statements are "appropriate" to consider in the application of critical thinking criteria to a source of testimony.

The common-sense ordinary language concept of relevance captures the notion of applicability. This sense of relevance is exemplified by the American Heritage Dictionary's definition of "relevant" as "having a bearing on or connection with the matter at hand" ("Relevant," 2014). However, in order to fully account for appropriateness, the notion of sufficiency must also be captured. "Appropriateness" needs to not only account for what statements are applicable to a critical thinker's decision, but to set a boundary around what statements are required to make that decision. The critical thinker needs to determine what statements might fall within that boundary (i.e., what information pertains to that decision) and when the pertinent statements that have been garnered are sufficient to make this decision.

Two questions can be posed regarding relevance. First, what does "relevance" mean? Second, how can relevance be used determine applicability? To answer the first question some contemporary theories of relevance will be examined. To answer the second question two different types of relevance will be differentiated, and the different ways that each type contributes to critical thinking practice will be noted.

7.3.1 Theories of Relevance

The concept of relevance is considered, at least briefly, in some accounts of testimony. One of Coady's (1992) conditions for considering statement *p* provided by a speaker S as testimony is: "S's statement that *p* is relevant to some disputed or unresolved question" (p. 42). Coady bases this condition on two different sources. The first is formal testimony offered in a court of law. He claims that formal testimony is a type of legal evidence, and it follows from this that "the testifier's remarks should be relevant to a disputed or unresolved question and should be directed to those who are in need of evidence on the matter" (p. 33). He also makes reference to testimony as a form of speech act "which may be and standardly is performed under certain conditions and with certain intentions such that we might naturally think of the definition as giving us conventions governing the existence of the act of testifying" (p. 25), one of which is relevance. By making relevance a condition for testimony Coady is noting that not just any true proposition offered up by a testifier constitutes testimony, rather, that the proposition must pertain in some way to the context in which it is offered up. However, analysing relevance is not Coady's particular concern, and he does not go on to offer a definition of relevance or to explore the concept any further. As a result, the account he provides does not give enough specifics to be of use here.

Olmos (2006) takes issue with the epistemology of testimony's focus on the statement to the exclusion of the context in which that statement is evaluated. She notes that

> by focusing on the epistemic evaluation of some particular piece of information delivered within a testimonial exchange, studies of testimony usually disregard the discursive texture and context of the practices involved. It is not, for example, only the answer to an inquiry that counts, but also the question itself, the number of implicit presumptions that it carries in order to frame possible responses, the realm of 'relevance' that it (more or less successfully) delimits (p. 219).

Although Olmos stresses the importance of relevance in discussions of testimony, she does not present any definition or further discussion of the concept. Origgi (2008) proposes a communications-based concept of testimony, and notes that 'in communication, people do not

look for true information, but for relevant information, that is, information that is relevant enough in a particular context to deserve our attention" (p. 42). She does not develop her own concept of relevance, but refers to the account provided by Sperber and Wilson that will be discussed in more detail below.

Although these writers in the literature on testimony mention relevance, they do not provide an analysis of the concept that can be applied in the critical thinking context. When writers in other areas of philosophy address relevance it is most often within contexts such as relevance logic, a type of non-classical logic proposed to circumvent non-intuitive consequences of classical logic's material implication (Mares, 2012) or in discussions of the frame problem in artificial intelligence (Xu & Wang, 2012). These discussions of relevance are conducted within very limited technical contexts, and do not produce concepts of relevance that are generally applicable outside of those contexts. An example of a philosopher who does address relevance in a more general sense is van Fraassen (1980) in *The Scientific Image*, a work in the philosophy of science. He notes that although "the problem of explicating relevance [is] not an easy matter" (p. 106) relevance is important to scientific explanation, and discusses the concept in some detail. According to van Fraassen, anyone asking for an explanation does so with certain interests in mind, and thus from a particular context. "The context …determines relevance in a way that goes well beyond the statistical relevance about which our scientific theories give information." (p.129). For example, a relevant explanation for the cause of a fatality in an automobile accident might be in terms of mechanical failure for a mechanic, but in terms of the victim's trauma for a doctor. Both explanations can be scientifically sound, but the interests of the person looking for the explanation determine the context for the explanation, and this context determines which explanation for the event is relevant. Explanation, for van Fraassen, is not a matter of reasoning from premises to conclusions, but of providing an answer to a question. The answer must be relevant to the question, and the relevance takes into account the interests of the person who asks the question.

While Coady, Olmos, Orrigi, and van Fraassen all talk about relevance and its role, none of them propose an account of relevance that is sufficiently developed to fully capture the notion

appropriateness that is being sought after here. The reason might be that these writers deal with relevance at a theoretical level, and that a concept of relevance that is useful for critical thinking must directly address practice. As Siegel (1992b) notes, in critical thinking "what counts as a good reason … [is] to a large extent extra-philosophical" (p. 271). Critical thinking practice needs to account for this extra-philosophical dimension, and it is necessary to look for a concept of relevance that is theoretically sound but practically applicable.

Sperber and Wilson have made relevance the center of their research on the pragmatics of language. In doing so, they have put forward a theory of relevance that, it will be argued, can be used to formulate a definition of relevance that can serve to characterize "appropriateness" in the critical thinking context. Relevance theory, as they call it, is a response to Grice's notion of implicature in the field of pragmatics. Grice proposed a theory of conversational implicature whereby the meaning of an utterance is conveyed not only by the literal meaning of the words in that utterance, but by what is implied by the speaker. Sperber and Wilson oppose Grice's "inferential model of communication" to the "classical code model" (Wilson & Sperber, 2006, p. 607) according to which meaning is coded into a sentence by the sender and decoded by the recipient. Grice, by contrast, holds that communication does not depend only on what is encoded in the sentence, but also on what is implied by the sender. Sperber and Wilson agree with Grice's approach as opposed to that taken by the classical code model, but do not agree with the way he develops his theory of implicature. They diverge from Grice primarily in the role they see relevance playing in communication theory. Grice does use relevance in his theory, but Sperber and Wilson consider it to be the central concept in their theory. Hence, "relevance theory may be seen as an attempt to work out in detail one of Grice's central claims: that an essential feature of most human communication is the expression and recognition of intentions" (p. 607)

Sperber and Wilson provide a technical theory of relevance, and note that they "are not trying to define the ordinary English word 'relevance'" (Sperber & Wilson, 1986b, p. 119). On their account, "relevance is a basic feature of human cognition" (Wilson & Sperber, 2006, p. 608). Relevance is related to an individual's cognitive activity, and "an input is relevant to an individual when its processing in a context of available assumptions yields a positive cognitive effect." (p.

608). A positive cognitive effect is achieved when something that is perceived, thought about, understood, or is any way serves as an input to an individual's cognitive processing results in a change to what the individual accepts cognitively. In Sperber and Wilson's words,

> cognitive effects are achieved when newly presented information interacts with a context of existing assumptions by strengthening an existing assumption, by contradicting and eliminating an existing assumption, or by combining with an existing assumption to yield a contextual implication (that is, a conclusion deducible from new information and existing assumptions together, but from neither new information nor existing assumptions alone) (Wilson & Sperber, 2012, p. 176).

A positive cognitive effect is achieved when input results in an improvement to the individual's knowledge. In their words, a positive cognitive effect will "improve the individual's knowledge not only by adding a new piece of information, but by revising his existing assumptions, or yielding conclusions not derivable from the new piece of knowledge alone or from existing assumptions alone" (p. 63). Input is relevant if it results in positive cognitive effects. "The input may answer a question the individual had in mind, it may raise or settle a doubt, suggest a hypothesis or a course of action, confirm or disconfirm a suspicion, correct a mistake" (p. 102).

Relevance depends not only on the positive cognitive effect that can be achieved, but also on the effort it takes to produce that effect. "The relevance of a proposition increases with the number of contextual implications it yields and decreases as the amount of processing needed to obtain them increases" (Sperber & Wilson, 1986b, p. 382). Relevance is a function of cognitive processing, and "humans automatically aim at maximal relevance, i.e., maximal cognitive effect for minimal processing effort" (1986a, p. 160).

Relevance, in the sense proposed by Sperber and Wilson, can thus be characterized in terms of "effect and effort." This characterization of relevance is applicable to the theory of critical thinking being proposed here as it demonstrates the balance between two factors that will form the theoretical basis for determining appropriateness. The "effect" factor can help the critical thinker determine if a statement is potentially pertinent to a decision by producing a cognitive effect, and the "effort" factor can help the critical thinker determine when enough potentially

pertinent statements have to make a decision. Together, these dimensions can be used to determine which statements are relevant to a decision in a particular situation.

7.3.2 Epistemic and Semantic Relevance

Although Sperber and Wilson formulated their concept in response to issues in the pragmatics of language, the insights they provide can be used to provide a definition of relevance that is applicable to critical thinking. The contention here is that a concept of relevance based on Sperber and Wilson's theory can be used to characterize the notion of "appropriateness" for critical thinking practice. A reformulation of Sperber and Wilson's definition of relevance in terms of critical thinking would run something like:

> *Relevance*: The relevance of statement p to R's decision d on what to believe or do increases with the contextual implications that p yields for d and decreases with the amount of cognitive processing needed to obtain those implications.

As Sperber and Wilson note, an adequate account of relevance can be technical, and does not need to capture exactly the same intuitions one might hold when using the term in ordinary language. For example, it might be argued that cognitive processing does not figure in the intuitive, ordinary language, notion of relevance. However, the addition of cognitive processing to this technical notion of relevance makes the concept useful for practice. In practice, it is not always possible to attend to everything that is theoretically "relevant" if the relevant is simply that which is potentially pertinent.

Sperber and Wilson's concept of relevance holds that relevance decreases with the amount of processing required to obtain a positive cognitive effect. A critical thinker who is evaluating a statement p must consider other statements in that evaluation such as potential defeaters and statements that are used in response to challenges. For the purposes of critical thinking, effort is not only required to process these statements, but to seek out and obtain these statements in the first place. To adopt this Sperber and Wilson's concept of relevance for the

purpose of critical thinking, the decrease in the relevance of a statement will be said to decrease in proportion to the effort of any type incurred in obtaining and processing a statement. This takes account of the practical limitations a critical thinker will face in a given situation. If a statement is readily accessible, the critical thinker will be able to process it and gain the advantage of the contextual implications it provides, and the relevance of the statement will be calculated based on the statement's contextual implications. However, if more effort is required to obtain and process a statement, the relevance of that statement will decrease. A statement that has critical implications for a decision will still have a high degree of relevance even if considerable effort is required to seek it out, as the benefit of the contextual implications of the statement will make the effort spend in procuring the statement worthwhile. However, a critical thinker need not expend unnecessary efforts in obtaining statements when the contextual implications of those statements are marginal.

Once a critical thinker has sufficient statements to use in a decision, other statements, even if they pertain to that statement are, according to the definition, irrelevant. For example, if I'm looking to buy a long-lasting paint for my exterior door, I might look up an article in *Consumer Reports* and ask the paint expert at the local hardware store for an opinion, and consider that I have enough information to make my decision. I could look up information in other sources or ask other people for advice, but there is no need to do so, as I do not need more information to make my decision. The critical thinker must determine what support is potentially applicable to a decision, and when sufficient support has been garnered to make the decision.

For the purposes of critical thinking it will be useful to factor out two facets of relevance. The first facet, which is captured by the definition above, will be termed "semantic relevance," and the second facet will be termed "epistemic relevance." Semantic relevance has to do with which information the critical thinker uses to make a decision, and the epistemic relevance has to do with the support that the critical thinker needs for that information. The definition proposed above will be re-labelled as "semantic relevance." This will both serve to differentiate it from epistemic relevance and highlight the fact that this is a technical definition, and not intended to

necessarily account for all the implications of "relevance" in ordinary language:

> **Semantic Relevance**: The semantic relevance of statement p to R's decision d on what to believe or do increases with the contextual implications that p yields for d and decreases with the amount of effort needed to obtain the statement p.

This definition of semantic relevance circumscribes the information that is pertinent to the critical thinker's decision on what to believe or do. For example, if John is looking for directions from Grand Central Station to the Empire State Building, "The Empire Building is seven blocks south" is relevant while "Brooklyn is east of Central Park" is not. This definition of relevance also accounts for practical limitations that the critical thinker faces when making a decision, as this definition makes relevance dependent not only on the pertinence of the information to the decision, but also on the effort required to process that information. For example, consider the case of John receiving directions to the Empire State Building from a random stranger in Grand Central Station. Unless he needs to be absolutely sure of those directions (such as in scenario C_2 of the bank case) he might ask another person for confirmation, but would not buy a guidebook from the Station's newsstand for the sole purpose of confirming the directions. Because relevance decreases with the amount of effort needed to determine contextual implications, it provides a measure of when the individual has sufficient information to make a decision. This sufficiency is not determined by the amount of pertinent information that is available, but by practical matters relating to the individual's ability to garner and process this information. A critical thinker will not look for more information to make a decision once the amount of effort it would take to find and process that information outweighs the contextual implications that this information would provide.

It was noted earlier that a notion of appropriateness is required to, first, enable the critical thinker to determine which statements need to be considered when making a decision. The concept of semantic relevance, it has been argued, can serve in this regard. Second, a notion of appropriateness should enable the critical thinker to determine what support is required for those

statements. This enables the critical thinker to determine how those statements should factor into the critical thinker's decision. The proposal here is that this issue can be addressed by a notion of "epistemic relevance":

> ***Epistemic relevance***: The epistemic relevance of semantically relevant statement p to R's decision d on what to believe or do increases with the justification that R requires for p in order to make decision d and decreases with the amount of effort needed to obtain that justification.

While semantic relevance measures the implications that a statement will have for a decision, epistemic relevance measures the weight of these implications. As the importance of p to the critical thinker, and hence p's epistemic relevance, increases, so does the requirement for more support for p. While epistemic relevance acknowledges the importance of the statement and provides a measure of the support required for the statement, it also acknowledges the practical implications of garnering support for that statement. Epistemic relevance indicates not only what support, or justification, is required for a statement p, but what bounds can be put around the amount of support required. At some point in the relevance calculation it is not worth expending the addition effort that would be required to obtain additional support for p.

It might be argued that false information is not relevant and that in order for a statement to be relevant, it must be true. This is the view held by Sperber and Wilson. While they do not spend much time on epistemic considerations, they do consider relevance to incorporate truth as "a positive cognitive effect is a worthwhile difference to the individual's representation of the world: a true conclusion, for example. False conclusions are not worth having. They are cognitive effects, but not positive ones" (Wilson & Sperber, 2006, p. 608). However, that notion is not particularly useful for critical thinking. A critical thinker evaluating a semantically relevant statement from a source does not know if a statement is true or false, but can only look for justification for the statement in accordance with the statement's epistemic relevance to the individual's decision. For example, John, by asking for directions to the Empire State Building, is in the first instance

soliciting semantically relevant information. He is interested in statements such as "The Empire State building is seven blocks south" rather than "Central park is 30 blocks north" or "Sacramento is the capital of California." As a critical thinker John will look for good reasons to accept or reject semantically relevant statements, and will not look for good reasons to accept or reject semantically irrelevant statements.

Under the technical definition of semantic relevance proposed here, false statements can be semantically relevant. For example, the statement "The Empire State Building is seven blocks north," although false, is semantically relevant as it addresses John's decision on which direction to proceed. If offered as testimony, John could accept this statement and head off in the wrong direction. As another example, consider alternate ways that the location of the Empire State Building could be passed on to John. Grand Central Station might have an information counter with "Frequently Asked Questions" and answers posted on a notice board behind the desk. One of these answers might read "The Empire State Building is seven blocks south," while another might read "Central Park is 20 blocks north." John would be interested in the first statement as it is semantically relevant, and would not be interested in the second statement as it is not semantically relevant. If there was no such notice board, but exactly the same information was crudely lettered on a sign being held just outside Grand Central Station by what looked like a distraught homeless person with an upturned hat at his feet for coins, John would still consider the statement to be semantically relevant. However, he might well consider it less well justified than if it was on the notice board behind the information booth, and might not consider it to be sufficiently justified to meet the expectations of epistemic relevance that he holds in order to make a decision based on that statement. As another turn on this example, imagine that John arrives on a late 2:00 am train, well after the information booth has closed, and that, in the interval between the booth closing and John's arriving a prankster has altered the FAQ to read "The Empire State Building is seven blocks north." Even though this statement is false it is semantically relevant, and John might consider the source, decide that the statement meets his requirements of epistemic relevance, and head north in search of the Empire State Building.

In practice, a critical thinker might not always be able to come up with sufficient justification to meet the expectations of epistemic relevance for a semantically relevant statement, and might not feel confident basing a decision on the statement. The options in that case are to reserve judgment and postpone the decision, to garner other semantically relevant information, or to make the decision in a way that mitigates any harm the resulting action or belief might cause. In the example of the bank case postponement is not an option. In scenario C_1 the demands of epistemic relevance are sufficiently low that it does not matter to R whether or not the cheque is deposited on Friday, and the decision of when to deposit the cheque can be based on other factors such as whether or not R wants to avoid the Friday crowds. In scenario C_2 R could either brave the crowds and deposit the cheque on Friday, thus mitigating R's risk, or could look for more support for (i.e., good reasons to accept) statement *p*: "The bank is open Saturday" by, for example, phoning the bank.

Two questions were posed at the beginning of this section: "What does 'relevance' mean?" and "How can relevance serve to regulate critical thinking practice?" Answers to these questions have been posed with the definitions and discussion of semantic and epistemic relevance. Semantic relevance helps determine which statements are to be evaluated, whereas epistemic relevance helps determine how to evaluate those statements.

7.4 Chapter Summary

Chapter 6 set out a testimony-based theory of critical thinking that included a notion of "appropriateness." This chapter has proposed that a concept of relevance could be useful for determining appropriateness in critical thinking practice, and Sperber and Wilson's cognitive processing based theory of relevance was used to develop a bi-faceted definition of relevance that can serve in this regard. With this technical device in hand, attention can be turned back to the theory of critical thinking itself. Chapter 8 will integrate this concept of relevance into the proposed testimony-based theory of critical thinking. As noted at the beginning of Chapter 6, the proposal is that theories of testimony can inform critical thinking theory, and that the support provided by critical thinking theory can serve to guide critical thinking practice. Critical thinking

criteria can be formulated with that support that will enable the critical thinker to identify potential defeaters and address the challenges that those defeaters present. The notion of relevance set out in this chapter will be used in that theory to determine which defeaters, challenges posed by defeaters, and responses to defeaters are appropriate. The result will identify "good reasons" that support the critical thinker's decision. Chapter 8 will explore how this testimony-based theory of critical thinking, as informed by the theory of testimony and regulated by semantic and epistemic relevance, can provide support for the selection and application of critical thinking criteria.

8. CRITICAL THINKING THEORY

The preceding chapters set out a theory of critical thinking that follows from and adds to Siegel's epistemology of critical thinking. The initial problem as set out in Chapter 2 is how to bridge the gap between Siegel's epistemology of critical thinking and critical thinking practice as laid out by the textbooks on critical thinking that were examined in Section 2.2. The criteria in those textbooks were compared, and an initial set of restated criteria that capture the essence of the criteria in the textbooks were set out. These restated criteria were applied to two examples of statements from Wikipedia with ambiguous results. It was determined that further guidance in the application of these criteria was necessary, and that the place to look for this guidance was the theory of critical thinking. Siegel's theory of critical thinking was identified as the most developed theory of critical thinking. As noted in Chapter 2, Siegel's (1988) theory views critical thinking as the "educational cognate of rationality" (p. 32), and involves the use of good reasons. However, Siegel's theory is directed to the critical thinking enterprise itself and not to critical thinking practice, and does not provide guidance for the selection and application of these critical thinking criteria. As a result, there is a gap between Siegel's theory and the practice of critical thinking.

In order to address this gap a testimony-based theory of critical thinking was proposed in Chapters 6 and 7 that falls within the context of Siegel's theory. Chapter 6 looked at what the philosophical literature on testimony could provide in the way of good reasons to use when evaluating sources, and guidance for how the critical thinker can go about this evaluation. The guidance includes an approach that involves appropriate monitoring for, identification of, and responding to defeaters. This guidance incorporates a notion of appropriateness that draws attention to the fact that salient features of the critical thinker's situation need to be accounted for in critical thinking practice. Chapter 7 set out a bipartite technical definition of relevance to characterize this notion of appropriateness.

Together, Chapters 6 and Chapter 7 provide the components of a testimony-based theory of critical thinking that provide guidance for the selection and application of critical thinking criteria. This chapter will bring these components together. Section 8.1 will focus on the

selection of critical thinking criteria, examining the various types of "good reasons" identified in

Section 6.2.1 and developing general criteria of critical thinking in relation to the model of

testimony set out in Section 5.1. Section 8.2 will focus on guidance for the application of these

criteria by a critical thinker, examining the principles for critical thinking identified in Section

6.2.2 and looking at how those criteria should be applied in the critical thinking process. While

this Chapter 8 will focus on the testimony-based theory of critical thinking itself, Chapter 9 will

look at the practical application of this theory to Wikipedia.

This chapter will use the vocabularies of critical thinking and testimony somewhat

interchangeably depending on the context. As noted in Section 5.2.1, critical thinking theory and

practice relating to statements obtained from sources and theoretical accounts of statements

delivered via testimony provide different perspectives on what is essentially the same case.

8.1 Guidance for Critical Thinking—"Good Reasons"

Before looking at the criteria that can be developed according to the types of good reason

identified in Chapter 6, it will be helpful to briefly look ahead to the next section which will go

into more detail about how these criteria should be applied. According to the principles of critical

thinking set out in Chapter 6, the critical thinker is granted an initial presumption to accept a

statement in the absence of any initially apparent defeaters, but also has a responsibility to monitor

for defeaters and respond in an appropriate manner to those defeaters and any challenges that they

present. This response will incorporate good reasons of some sort. The implication is that support

is not required for every statement, rather, support is only required if defeaters arise. Failing that,

there is a presumption in favor of accepting the statement. A potential defeater might well be met

by other good reasons in support of the statement. This section will set out various criteria for

critical thinking that will enable the critical thinker to identify "good reasons," and Section 8.2

will explore in more detail how these criteria should be applied in the critical thinking process.

Various types of good reasons suggested by the theories of testimony were identified in

Chapter 6. This section will take the first steps in setting out criteria for use in critical thinking

practice that are based on these types of good reasons. Before looking at these types of reasons in

more detail, it should be emphasised that criteria based strictly on these types of reasons will not exhaust the range of criteria that are to be employed in critical thinking practice. Siegel notes that philosophical considerations alone cannot determine criteria. He talks of criteria in relation to disciplinary contexts such as "history, physics, or indeed any particular disciplinary context" (1992b, p. 270), and also uses more general terms such as "field-relative criteria" (1985, p. 76) and "discourse frames" (1992b, p. 271). Restated in the vocabulary used in this dissertation, many criteria are relative to particular normative discourse contexts.

As noted in Section 2.4 there are many different theories of critical thinking, with some writers (for example, McPeck, 1990) holding that critical thinking is instantiated differently in different disciplines, and others (for example, Ennis, 1987) holding that critical thinking is a collection of particular capacities and skills that is applicable across different disciplines. Without getting into the specifics of this debate, Siegel can be viewed as holding a middle ground. On the one hand, he holds that the principles of critical thinking, which in his view is applied rationality, are applicable across all disciplines. On the other hand, he holds that criteria are often specific to a particular discipline, field, or "discourse frame." This dissertation will follow Siegel by holding that while criteria can be normative discourse context specific, the types of reasons identified in Section 6.2.1 can be used to determine other criteria, and to provide guidance in determining criteria at the normative discourse context level. To review, those types of reasons are as follows:

RT1: Support for statement itself.

RT2: Support for the credibility of the statement's provider.

RT3: Support for accepting testimony in general.

RT4: Support for the credibility of the normative discourse context by which the statement was obtained.

RT5: Support for the reliability of the process by which the statement was obtained.

This section will propose a number of criteria for critical thinking that are based on these types of reasons. These criteria will pose questions that the critical thinker will need to answer,

and the critical thinker can look to these reason types for reasons that provide answers to those questions. There is no claim here that the criteria developed on the basis of these reason types are the only criteria that can be used in critical thinking, or that what follows constitutes a complete and canonical list of criteria. Rather, the purpose is to demonstrate how the proposed testimony-based theory of critical thinking can be used to provide guidance for the selection and application of critical thinking criteria. According to the general definition of testimony set out in Section 5.1, testimony consists of a *statement obtained by a recipient from a provider in a particular discourse event according to the norms and practices of the normative discourse context*. The criteria developed here will apply to the normative discourse, be generally applicable within the normative discourse context, or be applicable to a normative discourse event.

The first group of criteria that will be examined are metacriteria (CM) for normative discourse contexts, where a normative discourse context is defined in terms of the norms and practices in which particular instances of testimony are framed. These metacriteria apply to the discourse contexts themselves and are used to evaluate attributes of a normative discourse context. In other words, the metacriteria are *about* normative discourse practices, and will be based on RT4. The second group of criteria are criteria for normative discourse contexts (CG). These criteria are for application *within* normative discourse contexts, and will enable the critical thinker to characterize what constitutes acceptable testimony in a particular normative discourse context, and to determine whether or not that there is anything about testimony conducted in this manner that is not sufficient for the critical thinker's needs. These criteria will be based on RT3 and RT5. These criteria apply, at least in general terms, to any type of testimony. The third group of criteria apply to the discourse event (CE) in which a testimonial transaction takes place and to the participants in the discourse event (provider, recipient) along with the statement that comprises the testimony itself, and will be based on RT1 and RT2. These criteria focus on particular instances of testimony. Although this group of criteria is specifically targeted to the normative discourse event, that does not mean that the criteria in the other groups should not be used when evaluating a specific instance of testimony. Rather, evaluation should take into consideration all the proposed

criteria as both defeaters and support for an instance of testimony can be found at the normative

discourse event or the normative discourse context level.

8.1.1 Normative Discourse Context Metacriteria

The first group of criteria to be examined are metacriteria (CM), which are directed to the

norms and practices of a particular normative discourse context as a group. As noted in Section

5.2.3, a normative discourse context can be defined as a discourse or a mode of communication

that is determined by a particular set of norms and practices, or set of conventions for conduct. All

testimony takes place with reference to the norms and practices of a particular normative discourse

context. Norms and practices vary between normative discourse contexts, and what constitutes

"good testimony" in a particular normative discourse context might not constitute "good

testimony" in another. A critical thinker will need to determine if what is held out to be "good

testimony" according to the norms and practices of a particular normative discourse context is

sufficiently "good" for the critical thinker's purposes. For example, a student evaluating a claim

in a Wikipedia article should first determine whether or not the norms and practices of Wikipedia

as a normative discourse practice are appropriate for the student's use of the claim. If not, the

claim should not be accepted without corroborating support from another source.

The first metacriterion simply makes explicit the fact that general criteria that are

applicable to all types of testimony should be applicable to testimony within any given normative

discourse context. If the norms and practices of a normative discourse context embody or

instantiate these criteria, then a testimonial exchange conducted according to these norms and

practices will be performed according to these general criteria as well:

Metacriterion CM1: The normative discourse context should instantiate the general

criteria for testimony.

The norms and practices of a normative discourse context can give rise to defeaters if a

recipient finds those norms and practices to be insufficiently robust to produce statements that the

recipient can rely on. Whether or not the challenges that these defeaters present are sufficiently strong to discount statements that derive from a particular normative discourse context is a matter of relevance. Consider again the example of John receiving a response to his question from a police officer in a hurry. Neither John nor the police officer violated the norms and practices of hurried conversation, but the norms and practices of hurried conversation as a normative discourse context allow for a great deal of potential misunderstanding. Depending on how important it is for John to have accurate directions, this might present a defeater for the normative discourse context itself that would cause John to reject the police officer's response.

This type of defeater can be responded to by good reasons supported by one of the reason types identified in in Section 6.2., *RT4: Support for the credibility of the normative discourse context by which the statement was obtained*. If those norms and practices are considered appropriate, that constitutes a good reason for accepting a statement that is provided according to these norms and practices. The following criterion can be proposed for application to the normative discourse context based on this type of reason:

Metacriterion CM2: The norms and practices of the normative discourse context should be appropriate.

While other criteria for application to a normative discourse context might be considered, the only one that will be proposed here has to do with multiple normative discourse contexts. A recipient might discount a particular statement on the grounds that the purpose for which the statement is required needs to be delivered in a normative discourse context with more stringent, or at least different, norms and practices. For example, an individual operating within a particular normative discourse context (say, academic research) would not accept statements from other discourse practices with norms and practices that potentially conflict with the norms and practices of the discourse practice in which the individual is engaged (say, statements from non-academic publications). An individual working within different normative discourse contexts needs to be

cognisant of the extent to which there is a transitivity of norms and practices between these normative discourse contexts. This gives rise to the following criterion:

Metacriterion CM3: Statements from different normative discourse practices should be used together only if those normative discourse practices have corresponding norms and practices.

Application of these criteria will be discussed in the context of their application to Wikipedia as a normative discourse practice in Chapter 9.

8.1.2 Normative Discourse Context General Criteria

The second group of criteria to be examined are directed to particular norms and practices within a normative discourse context. One of the types of good reasons identified in Section 6.2 is *RT3: Support for accepting testimony in general*. While Section 6.2 looked at general support for testimony that the philosophical theories of testimony provide, that support does not readily translate into general criteria for testimony at the normative discourse level. Although theories of testimony provide theoretical support for general criteria in the form of reason types, these theories provide neither reasons themselves nor criteria to identify those reasons. This is partly due to the theoretical nature of the philosophical discussions on testimony, and partly due to their focus on the standard case of testimony rather than the more complex case when factors relating to normative discourse practices need to be taken into consideration. The approach to general criteria that will be undertaken here is to first look at the initial set of criteria for sources from the critical thinking textbooks as identified and restated in Section 2.2 (expertise, stance, diligence, and reputation) as candidates for this type of general criteria. These criteria were set out by these textbooks for application by the critical thinker in all situations, and represent the summary of a good deal of thought by critical thinking experts. The contention here is that these criteria can be applied to testimony in general, and can in turn provide guidance for the selection of discipline specific criteria.

The initial four criteria were set in the context of what here has been called the "standard case" of testimony in which a critical thinker evaluates a single statement received in conversation from another person who is the source of the statement. This standard case of testimony takes place in a particular normative discourse context, and the contention here is that general criteria should be reflected in the norms and practices of any normative discourse context. How they are reflected will depend on the particular normative discourse context. A particular discourse event, in turn, should take place according to the norms and practices of the normative discourse context which embodies or instantiates these general criteria in some way. In order to determine how these criteria can be instantiated in particular normative discourse contexts each criterion will first be stated as originally formulated in Section 2.2 and then, following a brief summary and statement of the function the criterion should perform, re-formulated in more general terms to make its broader application to normative discourse practices more apparent. Discussion of the instantiation of these general criteria will be conducted in Chapter 9 where Wikipedia will be considered as a normative discourse context.

8.1.2.1 Expertise

Expertise (Original formulation): The source should have relevant expertise to speak on the subject.

A source's expertise should be evident and consistent with the expertise expected for the source. In some cases evidence of expertise might be direct. For example, an article in a scholarly journal will normally list sufficient information about its authors in the form of credentials or affiliation to enable the recipient to make a judgement regarding the authors' expertise. In other cases the evidence for the expertise might be indirect rather than direct, and the recipient will need to infer the source's level of expertise from contextual clues in the discourse event. For example, a stranger giving directions in a conversation will usually give some indication of his or her familiarity with the local geography.

While the discussion around the initial criterion of expertise implies that "expertise" equates to "subject expertise," the possibility of other types of expertise has been identified. In particular, the evaluation of Wikipedia according to the expertise criterion in Section 3.3.1 identified a secondary expertise in addition to a primary subject expertise. It is possible that other types of expertise might be identified that are germane to particular normative discourse contexts. For example, interpretative expertise (the ability to take what a subject expertise says and make it understandable to someone who does not understand it) might be an identifiable type of expertise that is held by individuals such as teachers or science writers. Various writers (e.g., Collins & Evans, 2007) have looked into other types of expertise; however, an exploration of these various types is beyond the scope of this dissertation.

Functionally, the expertise of a source is used to evaluate the source's ability to supply relevant information. Normative discourse specific criteria that relate to expertise, and that are used by critical thinkers when evaluating statements, should reflect how this function is properly carried out in that normative discourse practice. The general criterion of expertise can be expressed as:

General Criterion CG1: The source should have appropriate expertise.

8.1.2.2 Diligence

Diligence (Original formulation): The source should exercise due care.

A source might have the appropriate expertise but not make diligent use of that expertise. For example, referring back to the example of John looking for directions to the Empire State Building, the police officer might know where the Empire State Building is but might not pay attention to the question and, as a result, might give an erroneous answer to John's question. As another example, if a doctor who is a recognized expert in a particular area of medicine does not

exercise care and diligence in the practice of medicine the doctor's patients will not garner the full benefit of that expertise.

In a complex source the context must be taken into consideration as well as the actions of the provider, and that context must exhibit appropriate functionalities to enable the provider to exercise diligence. Section 5.2.1 provided a variant of the example that has been used in this dissertation of John asking for directions to the Empire State Building in which the policeman was in a hurry. It was suggested that this "policeman in a hurry" example could be interpreted as either an example of a standard conversation where the norms and practices of conversation are violated, or an example of a "conversation in a hurry" where the norms and practices were not violated, but might be inappropriate. This example can be further viewed in terms of diligence as either a case where the police officer does not exercise proper diligence, or a case where the norms and practices of "conversation in a hurry" do not provide sufficient functionalities to enable the police officer to exercise appropriate diligence. Functionally, diligence is used to evaluate the source's efforts and ability to deliver relevant information, and the general criterion for diligence can be expressed as:

General Criterion CG2: The source should demonstrate the appropriate functionality for and exercise of diligence.

8.1.2.3 Stance

Stance (Original formulation): The source should be unbiased, or not intend to deceive.

Stance focuses on the way in which a source delivers content. A source might have the requisite expertise to deliver content, and might exercise due care and attention in delivering that content, but might do so in order to use the content for purposes other than to supply information to a recipient in a straight-forward manner. The stance criterion focuses on that motivation, and the original formulation of this criterion states that the source should be unbiased. The evaluation

of Wikipedia according to this criterion in Section 3.3.2 explored different concepts of neutrality

in relation to bias, and determined that the issues around motivation are more complicated than

can be captured in discussions of bias alone. The concepts of neutrality allow exploration of this

complexity around motivation in a way that a simple statement regarding bias does not, and so

"neutrality" will be used along with "bias" in expressing this criterion. Functionally, stance is

used to evaluate the source's motivation in delivering the relevant information, and the general

criterion for stance can be expressed as:

> General Criterion CG3: The source should be neutral or should not be biased in an
>
> inappropriate manner.

8.1.2.4 Reputation

> Reputation (Original formulation): The source should have a good reputation.

Reputation is an outlier among the initial set of criteria. While the other criteria directly

reference properties of the source, reputation references external information and opinion

regarding the source. In other words, reputation is testimony regarding the source itself. As noted

in the discussion of Wikipedia in Section 3.3.4, reliance on this testimony can be problematic, and

there is no guarantee that reputation is an accurate measure of quality. However, reputation can be

an important factor in evaluation when a recipient has no first-hand knowledge of that source, and

is a measure of information about the source that the recipient is unable to determine directly. A

bad reputation is, at minimum, a potential defeater for statements from that source. Functionally,

the reputation of a source is used to evaluate external opinion on the source, and the general

criterion for diligence can be expressed as:

> General Criterion CG4: The source should be reputable.

8.1.2.5 Reliability

Along with these previously identified general criteria for testimony, an additional criterion is suggested by reason type RT5 identified in Section 6.2.1: *Support for the reliability of the process by which the statement was obtained*. Reliability captures a different perspective on testimony than is captured by the other general criteria. Those criteria are normative, and have to do with the actions, activities, and capabilities of the source. Reliability is a measure of results, and it is quite possible that a source with a laudable stance that exhibits diligence and is backed by a high level of expertise could still produce unreliable testimony. Functionally, reliability is used to evaluate the ability of the source to provide consistent testimony. This gives rise to the following general criterion for reliability:

General Criterion CG5: The source should be reliable.

8.1.2.6 Section Summary

To summarize, a source's *expertise* describes the source's skills and knowledge, and is used to evaluate the ability of the source to supply relevant information. Diligence and stance both relate to the source's conduct. *Diligence* describes the care and attention that the source displays, and is used to evaluate the delivery of the relevant information. *Stance* describes the motivation for delivering the relevant information, and is used to evaluate the source's intentions, or reasons for supplying the information. A source's *reputation* is used to evaluate what others think about the source, and constitutes testimony about the source. Finally, *reliability* is used to evaluate the source's ability to deliver consistent results. Together, these criteria can be used to evaluate both the ability of the source to provide relevant information as well as how reliable the source is in actually delivering that information.

The following sections will look at how these general criteria can be applied to the testimony model set out in Section 5.1, as well as what criteria result from the other types of good reasons set out in Section 6.2.1.

8.1.3 Event Criteria (Criteria for the Discourse Event)

The third group of criteria, event criteria, are directed to normative discourse events, and address the evaluation of statements provided in a particular event. As noted in Section 5.2.2, a discourse event is the point of contact between the recipient and the provider of the testimony, and is governed by the particular norms and practices of a normative discourse context. Physical events are governed by physical laws, and it is not possible for a particular physical event to deviate from the governance that these physical laws provide. This is not the case with the normative governance provided by the norms and practices of a normative discourse context, and a particular discourse event might deviate from those norms and practices. This might be intentional—for example, an individual might lie in a conversation, publish falsified results in a scholarly article, make up a news story, or intentionally place erroneous information in a Wikipedia article. A norm might also be violated unintentionally. An individual might give the wrong information in a conversation because a question was misheard, or an article might appear in the scholarly press with incorrect results due to mistakes in the editorial or publishing processes. As such, the first criterion for the discourse event has to do with following these norms and practices:

> Discourse Event Criterion CE1: The discourse event should be conducted according to the norms and practices of the normative discourse context.

Two of the types of good reason identified in Section 6.2.1 apply on the discourse event level. The first of these is *RT2: Support for the credibility of the statement's provider*. The following criterion can be proposed for application to the normative discourse context based on this type of reason:

> Discourse Event Criterion CE2: The provider of a statement should abide by the norms and practices of the normative discourse context.

If a recipient of a statement has reason to think that the provider might not be following those norms and practices, this gives rise to a potential defeater for the provider's testimony. The second type of good reason identified that is applicable to the normative event level is *RT1: Support for statement itself*. As noted in Section 6.2.1, this support is in the form of the individual's prior knowledge or background beliefs. The following criterion can be proposed for application to the normative discourse context based on this type of reason:

Discourse Event Criterion CE3: The statement should make sense in the context of what the recipient already knows

This criterion should not be interpreted to imply that the recipient should accept or reject the statement solely based on what the recipient considers to be the case, or that this prior knowledge should carry a veto on accepting new information. Section 8.2 will go into more detail about how criteria should be applied, but at this point it should be noted that the primary purpose of criteria is to provide guidance to the recipient when monitoring for defeaters. A potential defeater might well be met by other good reasons in support of the statement. For example, John, who is not familiar with New York City, might believe that the Empire State Building is somewhere in the vicinity of Central Park, and thus north of Grand Central Station. When he asks for specific directions he might be surprised when he is told to go south, and his prior belief should raise a potential defeater. He might have other reasons to dismiss the potential defeater, and not consider it to be a challenge (e.g., the provider is someone like a police officer who John has confidence in), or he might consider it to be a challenge and not accept the directions without confirmation from another source.

8.2 Guidance for the Critical Thinking—Process (Defeaters and Challengers)

With these criteria for the normative discourse context and discourse event in place, attention can be focused on how these criteria should be applied. Section 6.2 looked at what guidance the testimony-based theory of critical thinking has to offer the critical thinker when

evaluating a statement. The result was summarised in three principles. This section will explore

these principles, and how guidance based on these principles applies to critical thinking practice.

8.2.1 Acceptance

The first principle set out in Section 6.2.2 states:

PR2: The critical thinker should accept a statement in the absence of defeaters.

According to the proposed testimony-based theory of critical thinking set out in

Chapter 6, the proper response to testimony is to monitor and respond to defeaters rather than to

produce positive justification for every instance of testimony encountered in that context. This

differs from the way critical thinking criteria are presented in the textbooks, where critical thinkers

are encouraged to, in the first instance, obtain support for statements. Under the proposed theory,

if the critical thinker has no reason to consider the norms and practices of the normative discourse

context suspect, then, in the absence of defeaters arising from the application of those norms and

practices to a particular instance of testimony, the critical thinker is justified in accepting that

testimony.

As noted in Section 6.2.2, PR2 sets a default position as well as an endpoint for the

critical thinking process. This endpoint can only be reached after the appropriate monitoring has

taken place and any defeaters and challenges that came up during the monitoring process are dealt

with.

8.2.2 Monitoring

The second principle set out in Section 6.2.2 states:

PR1: The critical thinker should monitor appropriately for potential defeaters.

The provider and context together constitute the source that is to be monitored. Monitoring a source involves the application of critical thinking criteria in order to identify potential defeaters. When monitoring, a recipient will look not only at whether the provider followed the norms and practices of the context in an appropriate manner (as per Criteria CE2 from Section 8.1.3), but whether or not the norms and practices of the normative discourse context are appropriate (as per Criteria CM2 from Section 8.1.2). Chapter 7 set out a bipartite notion of relevance to use when determining what is appropriate in a particular situation. Defeaters and challenges are statements, and in order to be used in critical thinking practice the notion of relevance needs to be applicable to statements. Of particular interest is the relevance of a statement q to another statement p when the critical thinker, or recipient R, is using q to evaluate p. A definition of a potential defeater can be expressed in terms of the concept of semantic relevance set out in Chapter 7. The definition of semantic relevance set out in that chapter is:

Semantic Relevance: The semantic relevance of statement p to R's decision d on what to believe or do increases with the contextual implications that p yields for d and decreases with the amount of effort needed to obtain the statement p.

When evaluating statement p, R will consider statements that are semantically relevant to R's evaluation of p. A statement q that is semantically relevant to R's evaluation of p can be said to be semantically relevant to statement p. Based on the notion of semantic relevance, the following definition of a potential defeater can be set out:

A semantically relevant statement q is a ***potential defeater*** for p if q provides a reason for R to reject p.

The concept of semantic relevance provides guidance regarding the monitoring activity that the critical thinker needs to engage in. When monitoring, the critical thinker needs to be alert to statement that are semantically relevant to the decision the critical thinker is undertaking. A potential defeater does not require support; the only requirement for a critical thinker is a belief on

the part of the critical thinker that the potential defeater might have a bearing on the statement being evaluated.

8.2.3 Evaluation

The third principle set out in Section 6.2.2 states:

PR3: The critical thinker should appropriately evaluate the potential defeaters.

The evaluation of a potential defeater to statement p according to principle PR3 is a two stage process. The first step in evaluating a potential defeater is to determine whether or not it presents a sufficient challenge to the statement p to take into consideration in that statement's evaluation. If so, the defeater presents a challenge, and challenges are subject to another round of evaluation. Successful challenges result in rejection of the statement that is being evaluated. A challenge is a potential defeater that, if accepted, would defeat the statement being evaluated. In more formal terms, a challenge can be defined in terms of the concept of epistemic relevance set out in Chapter 7. The definition of epistemic relevance set out in that chapter is:

Epistemic relevance: The epistemic relevance of semantically relevant statement p to R's decision d on what to believe or do increases with the justification that R requires for p in order to make decision d and decreases with the amount of effort needed to obtain that justification

When evaluating statement p, R will consider statements that are epistemically relevant to R's evaluation of p. A statement q that is epistemically relevant to R's evaluation of p can be said to be epistemically relevant to statement p. Based on the notion of epistemic relevance, the following definition of a challenge can be set out:

An epistemically relevant statement *q* is a ***challenge*** for *p* if *q*'s acceptance would cause R to reject *p*.

As noted in the definition of epistemic relevance, an epistemically relevant statement is one that is in the first instance semantically relevant, but that also requires a certain amount of support. A potential defeater *q* becomes a challenge when it is sufficiently epistemically relevant to *p* that, if *q* is not defeated, *q* would serve as basis for the rejection of *p*. The second stage of evaluation involves responding to challenges. Reponses take the form of good reasons that address the challenges. A challenge is defeated if reasons can be found that are both semantically and epistemically relevant that are stronger than the challenge. If undefeated challenges remain, the statement should be rejected. A challenge *q* constitutes a defeater if that challenge is not defeated:

A challenge *q* for *p* is a ***defeater*** for *p* if *q* is accepted by R.

If sufficient support for statement *p* can be found to meet the challenges that are posed to *p*, the statement *p* can be accepted.

8.2.3 Criteria Application

Critical thinking criteria enable the critical thinker to monitor for defeaters and to respond to challenges presented by identified defeaters. The critical thinker will use the epistemic relevance of the statement under consideration to determine whether or not defeaters present sufficiently significant challenges to require a response, and if and when reasons for accepting a statement are sufficiently good to counter these challenges.

With these more formal definitions in hand, attention can be turned to how can the principles PR1-PR3 provide guidance for criteria application. Principles state what a critical thinker should do in general terms, while criteria are explicit instructions that can be applied in practice. Criteria can be applied in various ways at various stages in the critical thinking process, and could be overly complex if they incorporated provide guidance for their application within the

criteria themselves. Depending on their application, critical thinking criteria could be stated in different forms. The approach here is to subsume this guidance under one form of the stated criteria so that the guidance will not need to be explicitly re-stated with each criterion. This will enable a critical thinker to apply a criterion with a nuanced understanding of how that criterion should be applied at each step of the process. This is best done by reference to a particular example. Consider the following criterion (Criterion CE2 from Section 8.1.3 below) which will be stated in what here is called the "standard form":

CE2 (Standard form): The provider should abide by the norms and practices of the normative discourse context.

When used by the critical thinker to monitor the provider this criterion could be stated as:

CE2 (Monitoring version): Does the critical thinker have any semantically relevant reason q to think that the provider is not abiding by the norms and practices of the normative discourse context?

According to the definitions above, a semantically relevant reason q will constitute a potential defeater to the statement p being evaluated. When used by the critical thinker to respond to challenges, or to provide reasons in support of a statement, this criterion could be restated as:

CE2 (Evaluating version): Does the critical thinker have any epistemically relevant reason q to think that the provider is not abiding by the norms and practices of the normative discourse context?

According to the definitions above, an epistemically relevant reason q will constitute a potential challenge to the statement p being evaluated. If support is required for a statement p being evaluated the criterion could be stated as follows:

CE2 (Support version): Does the critical thinker have any epistemically relevant reason q

to think that provider is abiding by the norms and practices of the normative discourse

context?

The first, or "standard form" of the criteria will be used in the following chapters, and the

various versions of the criteria that are required for various purposes will be considered to be

derivatives from this standard form and not separate criteria that require restatement with each step

of the evaluation process. Thus, use of the term "defeater" will subsume notions of semantic

relevance and evaluating for the purpose of response, and use of the term "challenger" will

subsume epistemic relevance as well as semantic relevance, along with the process of monitoring

for potential defeaters, evaluating defeaters, and responding to challenges. As a result, it will be

assumed that the principles of critical thinking identified in Section 6.2.2 are incorporated in the

critical thinking criteria.

8.3 Chapter Summary

Applied critical thinking involves not only assessing statements according to criteria, but

determining which criteria should be applied in a given situation. Three levels of criteria were set

out in Section 8.1 based on the various reason types (RT), or types of good reasons for support of

testimony identified in Chapter 6: General criteria, criteria specific to the normative discourse

context, and criteria specific to the discourse event. General criteria are those that can be applied

to all types of testimony, and examples include the criteria initially identified in the critical

thinking textbooks. Normative discourse specific criteria are specific to and applicable to a

particular normative discourse context in which the statement, or testimony, is presented (e.g.,

conversation or Wikipedia), and discourse event specific criteria are specific to the discourse

event. Criteria for all levels need to be applicable by the critical thinker, and provide for the

incorporation of relevance considerations that take into consideration the recipient's particular

situation.

9. CRITICAL THINKING PRACTICE

The testimony-based theory of critical thinking developed in the previous three chapters resulted in a number of criteria for application by the critical thinker as well as a process to provide guidance when applying these criteria. This chapter will apply these criteria to examples in the Wikipedia environment. The first part of this chapter will determine what Wikipedia specific criteria result when the general criteria for testimony are instantiated in Wikipedia as a normative discourse context, and will be more descriptive in nature. The second part of the chapter will apply the critical thinking criteria to the two examples involving Wikipedia articles initially set out in Section 2.1, and will be evaluative in nature.

Although a particular set of criteria will be put forward in this chapter for evaluating Wikipedia claims, there is no claim here that this is the only set of criteria that could be put forward. The purpose of this chapter is to illustrate the application of the testimony-based theory of critical thinking developed in the previous chapters, not to determine a canonical set of criteria for evaluating Wikipedia claims.

9.1 Wikipedia Criteria

Metacriterion CM1 States: *The normative discourse context should instantiate the general criteria for testimony*. This section will examine the general criteria applicable to all normative discourse practices that were set out in Chapter 8, and determine how they can be instantiated as Wikipedia specific criteria when Wikipedia is considered as a normative discourse practice. The norms and practices of Wikipedia with respect to most of these criteria were discussed in Section 3.3, and this section will include a summary of that discussion. The general criteria for testimony set out in the previous chapter are expertise, diligence, stance, reputation, and reliability.

9.1.1 Expertise

General criterion CG1 states: *The source should have appropriate expertise*. Functionally, the expertise of a source is used to evaluate the source's ability to supply relevant

information. The norms and practices of a normative discourse context determine what expertise

is expected from a provider. For example, one approach to determining the expertise expected in

conversation can be inferred from the norms and practices of conversation that Grice (1991)

provides with his "conversational maxims." The "Maxim of Quality" includes two specific

maxims: "Do not say what you believe to be false" and "Do not say that for which you lack

adequate evidence" (p. 27). Combined, these specific maxims provide norms from which the

expertise expected in a conversation can be inferred. An individual is expected to provide

statements thought to be true and to have evidence for these statements, and the implication is that

the individual would need sufficient expertise to produce statements of this sort. In the critical

thinking literature this criterion refers to the expertise of the person making the claim, and

specifically to subject expertise, or the provider's expertise in the subject matter that comprises the

testimony's content.

As noted in Section 3.3.1, Wikipedia's policies put quite different expectation on

providers in relation to expertise. Due to Wikipedia's openness, contributors need to be

sufficiently interested in a subject to contribute to an article on the subject but do not need to be

subject experts. Wikipedia's policies handle this situation with a particular stance towards subject

expertise. The "No Original Research" policy prohibits contributors from adding original content

to Wikipedia even if they are subject experts. Rather, they are only permitted to add content that

has previously appeared elsewhere. The "Verifiability" criterion specifies that the source of this

content be properly attributed. The No Original Research criterion and the Verifiability criterion

defer primary, or subject, expertise to the cited sources. Wikipedia itself evidences a secondary

expertise that involves the ability to select, summarize, and cite the content created by first-order

subject experts. This secondary expertise is the type of expertise that should be considered when

evaluating expertise in Wikipedia articles. If secondary expertise is properly employed in the

creation of a Wikipedia article the sources where primary expertise lies will be properly selected,

vetted, cited, and summarized. Secondary expertise can be evaluated by how well the subject

seems to have been covered by the provider, and how well cited the article is. As a result, the

expertise criterion for Wikipedia calls for this secondary expertise:

Expertise CW1: Providers should have secondary expertise.

9.1.2 Diligencee

General criterion CG2 states: *The source should demonstrate the appropriate functionality for and exercise of diligence*. Functionally, diligence is used to evaluate the source's effort to deliver relevant information. In the standard case, in a conversational context, diligence refers primarily to the conduct of the provider. A diligent provider will make efforts to ensure that relevant information is being delivered in a manner that the recipient can understand. Due to its ubiquity and commonplace nature, the affordances of conversation along with its norms and practices usually remain implicit, and individuals normally assume that other individuals are competent conversationalists. In the case of complex sources such as Wikipedia, features of the context as well as the behavior of the provider need to be made explicit and taken into consideration when evaluating diligence. These features include the affordances of the context that enable delivery of information, as well as norms and practices of the normative discourse context that provide for diligent use of these affordances. At the normative discourse context level, diligence is a measure of the affordances that context provides to enable diligence on the part of providers, and includes the functionalities of the context as well as its norms and practices.

The initial examination of Wikipedia in Chapter 2 determined that Wikipedia's structure, policies, and editorial control provide affordances that cannot be attributed to many other Internet resources. Further analysis of Wikipedia in Chapter 3 found these affordances to be more varied, complex, and persistent across Wikipedia than the initial examination revealed. The framework in which these affordances are situated is twofold, consisting of Wikipedia's policy framework and its underlying software. No reason was found to doubt the functionality, or competency, of the software. The policies are well developed and enforced, and although compliance cannot be guaranteed all indications are that these policies are generally followed. This leads to the following diligence criterion for Wikipedia:

Diligence CW2: Providers should abide by Wikipedia's policies and procedures.

9.1.3 Bias

General criterion CG3 states: *The source should be neutral or should not be biased in an inappropriate manner*. Functionally, the bias criterion is used to evaluate the source's motivation. The diligence criterion focuses on the affordances of a normative discourse context, while the bias criterion focuses on the intentional and asks what the normative discourse context has in place with respect to these affordances to ensure that deception does not occur.

The question of bias was examined with respect to Wikipedia in Section 3.3.2 and found to be related to the notion of neutrality. It was noted that the concept of neutrality was problematic if "neutrality" was taken in the strong sense of maintaining a unified neutral stance that would be recognized as such according to strong philosophical notions of objectivity. Wikipedia's "Neutral Point of View" policy does not adopt this concept of neutrality as objectivity. Rather, this policy maintains that particular viewpoints should be made explicit and that conflicting or potentially conflicting viewpoints should be acknowledged at least by reference. Wikipedia policy equates neutrality with transparency rather than objectivity, and requires a source to make its viewpoint explicit, and, at least by reference, to address conflicting or potentially conflicting viewpoints. This emphasis on transparency rather than objectivity acknowledges that a source will have a particular point of view or perspective. With Wikipedia, the norms and practices relating to stance do not attempt to remove bias, but to make bias explicit—both that of the provider's position and, by comparison, that of other positions.

When this criterion was initially applied to Wikipedia, and in particular to the Neutral Point of View policy, the conclusion was that Wikipedia's implementation of this policy was potentially problematic. On review it was determined that compliance with this policy was less arbitrary than initially feared, as the neutral stance this policy advocates permeates Wikipedia governance and practice and is policed by various methods. Wikipedia policy calls for providers to make bias explicit and to represent all significant viewpoints:

Stance CW3: Providers should make bias explicit and represent all significant viewpoints.

9.1.4 Reputation

General criterion CG4 states: *The source should be reputable*. Functionally, the reputation of a source is used to evaluate external opinion on the source, that is, to capture information about the source that the recipient is unable to evaluate. There are two factors to consider when looking at a criterion for reputation in Wikipedia. First, what is the reputation of Wikipedia itself? And second, what is the internal reputation of any particular source of Wikipedia testimony? As a result, the general criteria can only be captured by proposing two Wikipedia specific criteria—one to capture Wikipedia's external reputation, and another to capture the reputation of the particular source within Wikipedia, the normative discourse context, itself.

As noted in the initial evaluation of Wikipedia in Section 2.3, there are cautions in the literature on Wikipedia regarding how much credibility Wikipedia should be given. Wikipedia is often recommended as a first place to look because of its comprehensibility, but not as a final source of information because of its uncertain quality. However, the re-assessment of Wikipedia in Section 3.3.4 found that studies of Wikipedia, although not comprehensive and conclusive, indicate that Wikipedia is generally reliable. This suggests that reputation might not always reflect quality. Reputation is garnered through testimony, and needs to be treated and evaluated as such. As such, although reputation should be factored into evaluation, it should not be the defining factor if there are factors available for consideration. For example, Wikipedia is often saddled with a negative, or at least neutral reputation based on observations of the form "the methods of Wikipedia differ from those used to compile traditional reference sources." As a result, Wikipedia's reputation, if based solely on the opinions derived from the fact that it is different, without any analysis or evidence regarding the impact of this difference, does not necessarily provide an accurate measure of Wikipedia's quality. However, if these opinions are balanced by the studies of Wikipedia's reliability and accuracy that were examined in Section 3.3.5, it could be

concluded that Wikipedia has a good, if not an unsullied, reputation. This reputation needs to be taken into account when a critical thinker is assessing Wikipedia:

Reputation (External) CW4a: Wikipedia should have a good reputation.

There are numerous factors that point to the reputation of the source of the particular testimony within Wikipedia itself. These factors take the form of one type of commentary or another, are usually at the article level, and include, for example, discussion pages, history pages, indications that the article or portions thereof require further work such as "citation needed" flags, the inclusion of an article in a WikiProject in certain cases, and, at the highest level, the identification of an article as a feature article. These indications of quality all point to the article's internal reputation. If there are no such factors it does not mean that the article is necessarily of low quality, but does point to the fact that internal reputation can sometimes be indeterminate:

Reputation (Internal) CW4b: Internal Wikipedia commentary should be positive.

9.1.5 Reliability

General criterion CG5 states: *The source should be reliable*. Functionally, reliability is used to evaluate the ability of the source to provide consistent information. It was determined in Chapter 3 that it would be difficult if not impossible to undertake a large-scale examination of Wikipedia as a whole, and, as a result, that it is not possible to provide a conclusive answer to questions regarding Wikipedia's overall reliability. However, the literature on Wikipedia does indicate that Wikipedia's technological underpinnings and affordances are generally reliable. The studies of Wikipedia content that were conducted, although limited, also give reason to consider Wikipedia to be generally reliable. Another approach to assessing Wikipedia's reliability is to compare its potential for reliability to that of both general Internet resources and scholarly publishing. It can be argued that Wikipedia has more potential for reliability than general Internet resources due to its structure and normative practice, but less potential for reliability than scholarly

publishing where a stringent (but not infallible) peer review process ensures that the published output has been vetted by experts. On the other hand, Wikipedia might be more reliable than some publications on the fringes of scholarly publishing, for example, those from so-called "predatory publishers" (Beall, 2012). These publications do not consistently abide by the norms and practices of scholarly publishing, and in some cases accept all articles submitted for publication without any type of review.

It was determined in Section 5.2.3 that Wikipedia can be viewed as a form of an explicitly normative society of the sort described by genealogical accounts of testimony. The accounts of Wikipedia as a normative society and Wikipedia as the result of reliable processes can be seen as complementary. The normative nature of the Wikipedia society provides stability for Wikipedia, and this stability in turn is a reason for considering Wikipedia to be a reliable process. Similarly, the reliability of Wikipedia supports the contention that the Wikipedia community is a normative society. The conclusion was that Wikipedia could be considered a reliable, if fallible, source of knowledge.

Further support for claiming Wikipedia to be the result of a reliable process can be provided by what the literature on testimony refers to as "chains of testimony." Testimony that is dependent on a single linear chain is weakened by this reliance, as each link provides additional potential for error in the transmission of the original. However, these chains can be more complex. Coady (1992) argues that certain types of these more complex chains can provide support for rather evidence against testimony. For example, consider a historian with access to copies of a manuscript, but not to the original. There is potential for errors in transcription to occur in each copy. If the historian has only a single copy these errors would be difficult and perhaps impossible to spot. However, if the historian has access to multiple copies that were made independently, these copies can be compared and artifacts that only appear in a single copy can be identified as potential errors. Wikipedia is not only a provider of testimony, but a recipient of testimony from its cited sources, and thus relies on something like these parallel chains. Articles often have multiple contributors, and these contributors all have access to the same sources through the article's citations. In the process of creating and editing the article these contributors

have the opportunity to correct errors made by other contributors in synthesizing information from these sources.

Wikipedia is fallible, but fallibility alone is not sufficient reason to dismiss testimony that is obtained from a reliable source or through a reliable process. There is general acceptance of knowledge acquired through other reliable processes such as perception, with, of course, recognition that these processes are fallible. Support from the literature on Wikipedia, comparison to other information resources such as the Internet in general and scholarly publishing, as well as the support from the philosophical literature on testimony regarding chains of testimony provide reasons to consider the processes that generate Wikipedia content to be fallible, but generally reliable. The critical thinker should use this criterion to determine if Wikipedia can be considered sufficiently reliable for the critical thinker's purposes:

Reliability CW5: Wikipedia should be reliable.

9.2 Wikipedia Examples

Chapter 8 sets out criteria for the evaluation of normative discourse contexts as well as criteria for the evaluation of the discourse event in which the particular statement being evaluated is encountered. These criteria should enable the critical thinker to identify potential defeaters and address the challenges that those defeaters present. The relevance of the statement under consideration can be used to determine which defeaters, challenges posed by defeaters, and responses to defeaters are appropriate. These responses will take the form of "good reasons" that support the critical thinker's decision. If the critical thinker has appropriately monitored for defeaters and has garnered appropriate good reasons in response to challenges posed by those defeaters, the critical thinker is entitled to accept the statement being evaluated. Critical thinking is about "good reasons," not about the truth of the statement itself, or certainty on behalf of the critical thinker that the statement is true. If the critical thinker has reasons to be uncertain, or to doubt the statement's truth, those reasons constitute potential defeaters for the statement. However, if there are no undefeated defeaters for the statement, this lack of defeaters itself

provides sufficient good reason to accept the statement. Barring reasons to the contrary, the recipient is entitled to accept as true that presented as true.

When looking for defeaters, it should be noted that success or failure of a particular instance of testimony can sometimes be attributed to a failure of the normative discourse context itself, and sometimes to a failure of a particular norm or practice of that normative discourse context. Consider the example of "police officer in a hurry" from Section 5.3.2, where John asks a police officer for directions and the police officer responds to John's query with a quick over the shoulder reply. This leaves John unclear whether his question had been understood, and unwilling to act based solely on the police officer's reply. This failure could be interpreted as an example of a normal conversation where the norms and practices are not followed, or an example of "conversation in a hurry" when the norms and practices are inadequate. Similarly, a Wikipedia statement might fail evaluation because it did not meet Wikipedia's norms and practices, or because those norms and practices were inadequate to the current task.

A considerable number of criteria (seventeen in all) were set out in Chapters 8 and 9 in four groups (metacriteria, general criteria, Wikipedia specific criteria, and discourse event criteria). However, the critical thinker does not have to work through all seventeen when evaluating a statement. First of all, Metacriterion CM1 for a normative discourse practice states that "The normative discourse context should instantiate the general criteria for testimony," so this criterion is reflected in the general criteria. This leaves the following metacriteria for the critical thinker to attend to:

CM2: The norms and practices of normative discourse context should be appropriate.

CM3: Statements from different normative discourse practices should be used together only if those normative discourse practices have corresponding norms and practices.

Each of the general criteria for a normative discourse context (CG) was instantiated by a specific Wikipedia criterion (CW), so the general criteria do not need to be separately applied. The Wikipedia specific criteria that need to be applied are as follows:

CW1 (Expertise): Providers should have secondary expertise.

CW2 (Diligence): Providers should abide by Wikipedia's policies and procedures.

CW3 (Stance): Providers should make bias explicit and represent all significant viewpoints.

CW4a (Reputation—External): Wikipedia should have a good reputation.

CW4b (Reputation— Internal): Internal Wikipedia commentary should be positive

CW5 (Reliability): Wikipedia should be reliable.

The last group of criteria applies to the discourse event. Of these criteria, CE1 (The discourse event should be conducted according to the norms and practices of the normative discourse context) and CE2 (The provider of a statement should abide by norms and practices of the normative discourse context) are covered by CW2 (Providers should abide by Wikipedia's policies and procedures). This leaves:

CE3: The statement should make sense in the context of what the recipient already knows.

Before moving on to apply these criteria to the Wikipedia examples that were initially set out in Chapter 2, some preliminary comments should be made regarding a discourse event in the Wikipedia context. As noted on Section 5.2.2, the discourse event in the standard case of conversation is the conversation itself, while in the case of Wikipedia the discourse event is the reading of a Wikipedia article. The discourse event reflects the point of contact between the recipient and the provider of the testimony. Due to the anonymity of the provider the critical thinker has no means to directly evaluate the provider or providers of a Wikipedia article. Wikipedia contributors can choose to register, but normally do so using a pseudonym. The history page associated with an article lists all edits to that page and identifies registrants' edits by these pseudonyms. These registrants might have garnered a reputation of some kind in the Wikipedia

community on the basis of their participation in this community. However, this association will only be apparent to those in the community who have engaged with these contributors. An interested reader can look up other article edits or talk page comments made by a registrant and get some idea of what sort of contributions the individual has made to Wikipedia, but the contributor still remains anonymous and, as noted, many edits are made by unregistered contributors.

As a result, the recipient will need to evaluate the Wikipedia article itself rather than the provider of the article, and make a determination of whether or not, and to what extent, that article has been produced according to Wikipedia's norms and practices. As a first level of evaluation the critical thinker can evaluate the article based on, for example, factors that show evidence of care and attention such as quality of writing, evidence that the page has been reviewed and edited, as well as proper attribution of content and a list of cited sources that appears to be appropriate to the subject. Sparse or disjointed content indicate that the article is not properly put together and does not reflect first-order expertise adequately, and pose potential defeaters. As a second level of evaluation attention can be directed to supplementary material such as talk pages or edit history. These pages can be used, for example, to help identify articles that have become war zones between competing parties on contentious topics, and that are better viewed as such rather than as reflecting legitimate first-order expertise. Additional follow-up can be made internally in Wikipedia to linked articles, and externally to cited information.

Two statements from Wikipedia, entailing claims of fact regarding Itanagar and the vaccine controversy, were set out as examples in Section 2.1. To illustrate the application of the criteria for critical thinking set out earlier in this section, these two statements will be re-examined by applying these criteria. The intent is not to provide full and extensive analyses of the examples, but to demonstrate the applicability of the proposed theory of critical thinking. In summary, the criteria to be applied are:

CM2: The norms and practices of normative discourse context should be appropriate.

CM3: Statements from different normative discourse practices should be used together only if those normative discourse practices have corresponding norms and practices.

CW1 (Expertise): Providers should have secondary expertise.

CW2 (Diligence): Providers should abide by Wikipedia's policies and procedures.

CW3 (Stance): Providers should make bias explicit and represent all significant viewpoints.

CW4a (Reputation—External): Wikipedia should have a good reputation.

CW4b (Reputation— Internal): Internal Wikipedia commentary should be positive

CW5 (Reliability): Wikipedia should be reliable.

CE3: The statement should make sense in the context of what the recipient already knows.

9.2.1 Itanagar Example

The first example introduced in Section 2.1 at the beginning of this dissertation reads as follows:

A high school student writing a paper on Buddhism reads about the Dalai Lama consecrating a temple in the city of Itanagar, and wants to know where Itanagar is. The Wikipedia article on the city of Itanagar, and the particular claim examined can be stated as: "The city of Itanagar is in India." It was found that other sources (including Google Maps, other Internet sites and linked Wikipedia articles) show that this claim is contentious, and that Itanagar is in territory that is in dispute between India and China.

The claim being examined here is "The city of Itanagar is in India," and the context for the claim is the article on Itanagar in Wikipedia ("Itanagar," n.d.). The critical thinker is a high school student working on a class paper. The criteria set out in the previous section can be applied as follows:

CM2 (*The norms and practices of normative discourse context should be appropriate*). The first task of the critical thinker is to determine if Wikipedia is an appropriate normative discourse context for the critical thinker's purpose. Even in the age of the Internet a high school student can have difficulty finding information on more esoteric matters. It is quite possible that the student can only find the information in this example on the Internet in Wikipedia and Google Maps, and that by default they are the best sources of information available to the student. Although the student might not be aware of exactly what Wikipedia's norms and practices are, Wikipedia does, even on first encounter, distinguish itself from other Internet resources as a source of information. Semantic relevance, it will be recalled, does not just measure whether or not additional information might be related to an individual's question, but whether or not the individual deems it worth expending the effort to obtain that information. Considerations of semantic relevance might mean that the student does not see the need to look further for more information on the subject. On the other hand, the student might be uncertain as to what the norms and practices of Wikipedia actually are, and this might raise a potential defeater regarding whether Wikipedia is an appropriate resource for the assignment. A cautious student might further investigate Wikipedia's workings, and if not satisfied with what he or she finds, might reject Wikipedia as a source. However, the student's decision regarding appropriateness will most likely be directed by CM3.

CM3 (*Statements from different normative discourse practices should be used together only if those normative discourse practices have corresponding norms and practices*). University students are normally expected to cite sources from the scholarly literature. Although they might cite other sources if those sources are discussed in the paper, they would not cite these sources in support of claims the student makes. By contrast, standards for a high school might not be as rigid, and these standards will depend on the teacher and assignment. Although there is a tendency to prohibit the citing of Wikipedia articles to support claims in school assignments, there is also some indication that, at least in certain instances, this prohibition might be relaxed (e.g., Harouni, 2009). For the present purpose, it will be assumed that the student is free to cite Wikipedia as well as other sources such as newspapers and popular magazines in support of

claims, and that whether to cite the article is a call that the student must make. Epistemic

relevance, it will be recalled, does not just measure whether additional support might be required

for a statement, but whether the individual deems it worth expending the effort to obtain that

support. The student might decide that the information in Wikipedia satisfies requirements of

epistemic relevance, and that further support for the claim is not required. Assuming that the

student has decided that Wikipedia is an appropriate source of information at the normative

discourse level, attention can be directed to the discourse event, or the Wikipedia article

containing the statement being evaluated.

CW1 (*Expertise: Providers should have secondary expertise*). As noted in the previous

section, due to the anonymity of Wikipedia properties of the provider will need to be ascertained

with reference to the provider's product, that is, the Wikipedia article itself. In this example the

article's appearance and presentation carries an air of authority, and it appears to embody

significant expertise. From the perspective of a high school student this criterion is unlikely to

raise any defeaters.

CW2 (*Diligence: Providers should abide by Wikipedia's policies and procedures*). The

student will most likely not have any in-depth knowledge of Wikipedia's policies and procedures.

However, this article looks similar in structure and presentation to other articles on similar topics,

and there's no sign that the article as a whole has been flagged as being inappropriate in any

manner. As such, there is nothing in the article to indicate that the providers have not abided by

Wikipedia's policies and procedures.

CW3 (*Stance: Providers should make bias explicit and represent all significant

viewpoints*). The example indicates that the student is aware of how Google Maps handles the

issue. If the student does not see any indication in the Wikipedia article of the conflict that Google

Maps illustrates, a potential defeater could arise as the article's stance is not neutral in the

Wikipedia sense of not including all alternative perspectives. If the student does further checking

he or she might find that there is a linked article ("Arunachal Pradesh," n.d.) on Arunachal

Pradesh, the Indian province of which Itanagar is the capital, which states that sections of the

province have been claimed by China. This linked article has been rated for quality by various

WikiProjects: as B-class by WikiProject India, and as C-Class by WikiProject Tibet and WikiProject China. Although the article on Itanagar gives no explicit clues that the information it contained might be in dispute, linked information in this linked article indicates that this dispute is known and flagged as such in the Wikipedia infosphere. However, the fact that the article on Itanagar itself presents no significant defeaters might deter the student from checking out the linked articles, and the potential defeater raised by the information found in Google Maps might stand.

CW4a (*Reputation—External: Wikipedia should have a good reputation*). Wikipedia's use indicates that it enjoys a good reputation amongst students, who find it to be a sufficiently reliable source of information to return to regularly (Purcell et al., 2012).

CW4b (*Reputation—Internal: Internal Wikipedia commentary should be positive*). The article itself is well developed and complete, with citations and a list of external links. The associate history page details an extensive edit history, and there are no flags in the article itself indicating controversial points or sections that require citations. As such, no defeaters arise out of the composition and presentation of the article itself.

CW5 (*Reliability: Wikipedia should be reliable*). The student will probably not be in a position to evaluate Wikipedia's reliability in any way other than to consider factors such as its general reputation and the instructions (if any) received from the teacher concerning Wikipedia's use. While these might serve as general indicators of reliability, any defeaters that arise regarding reliability would most likely also arise from the consideration of other criteria.

CE3 (*The statement should make sense in the context of what the recipient already knows*). A high school student in North America would not normally be expected to have sufficient background knowledge of geography and geopolitics to have reasons to question the claim. However, a student who views the information on Google Maps and, perhaps, the linked article on Arunachal Pradesh, might recognize the political undertones of the claim. This might prompt an examination of the talk page associated with the Itanagar article to get a sense of whether the contributors to the article are trying to present all the facts, or are trying to advance a particular nationalistic perspective. If there are indications of the latter, this might provide

additional reasons to accept the potential defeater raised by the stance criterion. Aside from the issue of bias, whether or not this potential defeater presents good reasons for not using the article might depend, at least in part, on how the student intends to use the information in the article. The example indicates that the student is writing a paper on Buddhism, and the student might decide that the issue of stance relates specifically to the question of which countries have a claim to Itanagar, not to any information the article has on Buddhism. However, the student might decide that jurisdictional issues are not pertinent to the paper and that a general geographical location of Itanagar in India as opposed to, for example, Thailand is sufficient. On the other hand, the student might decide that it is important to differentiate China and India for the purposes of the paper, and that the jurisdictional dispute is pertinent.

In summary, potential defeaters might be raised by concerns regarding whether Wikipedia is an appropriate source to cite for the paper (i.e., whether Wikipedia's norms and practices are appropriate), or whether the article demonstrates bias (i.e., whether all significant points of view regarding the claims have been rendered explicit). The assumption made here is that the use of Wikipedia has not been forbidden by the teacher, and that the decision on whether or not to use Wikipedia resides with the student. On that basis, defeaters that might arise as to the suitability of Wikipedia would most likely not produce sufficient reasons for the student to reject Wikipedia as a source. This leaves the potential defeater regarding bias. The student might determine that the issue of stance raises sufficient reason to question the article, and, on that basis, will not use the claim in his or her paper.

9.2.2 Vaccine Example

The second example introduced in Section 2.1 at the beginning of this dissertation reads as follows:

A high school student writing a paper on autism reads a news story about the possibility of the measles vaccine contributing to autism. The Wikipedia article ("Vaccine controversy," n.d.) on the connection between the measles vaccine and autism, and the

particular claim examined can be stated as: "No connection between the measles vaccine and autism has been proven." Another Internet site strongly suggests that there is a connection ("KNOW," 2005).

The claim here is: "No connection between the measles vaccine and autism has been proven" and the context for the claim is the article on the vaccine controversy in Wikipedia ("Vaccine controversy," n.d.). As in the first example, the critical thinker is a high school student working on a class paper. Since issues around the evaluation of this example are similar to those around the previous example, analysis of this example will be briefer, and will focus on issues unique to it:

CM2 (*The norms and practices of normative discourse context should be appropriate*): Again, the first task of the critical thinker is to determine if Wikipedia is an appropriate normative discourse context, and a potential defeater might arise in the form of uncertainty about what the norms and practices of Wikipedia actually are. In particular, potential defeaters might arise around the sufficiency of Wikipedia to serve as a resource for medical information.

CM3 (*Statements from different normative discourse practices should be used together only if those normative discourse practices have corresponding norms and practices*). As with the previous example, the teacher might have provided guidance regarding the expected use of Wikipedia in class papers. It will be assumed that Wikipedia has not been discounted as a permissible source of information for the paper and that the student accepts Wikipedia as a legitimate source.

CW1 (*Expertise: Providers should have secondary expertise*). While a high school student might be prepared to accept Wikipedia as a source of general information, the student might be less likely to accept Wikipedia as a source of medical information and might seek support for the statement from dedicated medical sites or from any print versions of medical encyclopaedias or dictionaries that are available to the student.

CW2 (*Diligence: Providers should abide by Wikipedia's policies and procedures*). As with the previous example, there is nothing in the article to indicate that the providers have not abided by Wikipedia's policies and procedures.

CW3 (*Stance: Providers should make bias explicit and represent all significant viewpoints*). The KNOW site cites articles in the scholarly literature, newspaper articles, and various other sources of information, and holds that there is a link between the measles vaccine and autism. As such, there are statements on this site that directly contradict the statement from the Wikipedia article that is being evaluated. The KNOW site also focuses on issues such as parental and personal choice, individual rights, and religious freedom. These issues are covered in the Wikipedia article, but the coverage is brief and the tone could be interpreted as dismissive. If the student is aware of the Wikipedia concept of neutrality, the KNOW site might raise a potential defeater because the point of view this site represents is not represented in the Wikipedia article as an alternative perspective.

CW4a (*Reputation—External: Wikipedia should have a good reputation*). As the article is to be used for a high school student's paper, much the same considerations apply to this article as to the article on Itanagar. From the perspective of a high school student Wikipedia can look authoritative and reliable, and is frequently used by high school students.

CW4b (*Reputation—Internal: Internal Wikipedia commentary should be positive*). The article is well developed and complete, and includes citations and a list of external resources, and do not give rise to defeaters.

CW5 (*Reliability: Wikipedia should be reliable*). As with the previous example, the student will probably not be in a position to evaluate Wikipedia's reliability, and any defeaters that arise regarding reliability would most arise when other criteria are considered.

CE3 (*The statement should make sense in the context of what the recipient already knows*). A high school student will probably know that autism and measles are diseases and what the function of a vaccine should be. As such, there will probably be no defeaters raised regarding the facts of the matter in relation to the student's general knowledge. However, the student might have views or convictions regarding the associated issues such as rights, choice, and the politics of

corporations that supply vaccines, and these views or convictions in conjunction with the information provided on the KNOW site might raise potential defeaters for the statement that "No connection between the measles vaccine and autism has been proven."

In summary, the juxtaposition of the Wikipedia article and the KNOW site could give rise to a number of defeaters for the claim under evaluation. Determining whether these potential defeaters constitute challenges, and if so, determining whether these challenge offer sufficient good reasons to defeat the claim is a complex issue. Formulating the issue in terms of potential defeaters, challenges, and good reasons provides means to focus the evaluation. This focus will help the student to determine which of the potential defeaters are insufficiently supported to be challenges to the statement, which might be challenges to the statement, and which flag side issues that might be worthy of consideration in their own right but do not bear directly on the statement under consideration.

9.3 Chapter Summary

These evaluations of the Wikipedia examples are provided for illustration and are not intended to explore all the directions that these evaluations might take in practice. Further, these evaluations did not reach definite conclusions because, in order to explore different possibilities, the situations described in the examples were not fully defined. However, these evaluations do demonstrate why the initial and subsequent analysis of these examples in Sections 2.1 and 3.3 were indeterminate. Those analyses did not take account of either the critical thinker's situation or Wikipedia's normative discourse context. Also, as noted at the beginning of this chapter, there is no claim that the set of criteria developed in this chapter for application to Wikipedia is definitive, and further work in the application of the testimony-based theory of critical thinking to Wikipedia might suggest changes to this set of criteria.

The statement of purpose set out at the beginning of this dissertation is: *What theoretical grounding can the current epistemological literature on testimony provide for critical thinking criteria that are applicable to knowledge claims such as those found in Wikipedia?* This chapter has answered this question by demonstrating that the proposed testimony-based theory of critical

thinking does provide theoretical foundations for criteria of acceptance that are applicable to

knowledge claims such as those found in Wikipedia articles. The proposed critical thinking theory

enables the selection and application of criteria for the evaluation of Wikipedia claims and

provides a path for a critical thinker to follow when evaluating these claims.

10. CONCLUSION

This chapter will begin with a summary of this dissertation and its findings. It will go on to highlight this dissertation's contributions to the theory of critical thinking, as well as implications that the proposed testimony-based theory of critical thinking has for both the practice of education and for critical thinking practice in an educational context. It will conclude with some suggestions for further research.

10.1 Summary

The Internet's rapid growth and continually changing nature preclude the mature development of the sort of cues that provide a reliable indication of credibility. As a result, individuals who can reliably determine the credibility of material presented through more traditional media might encounter problems making this determination with Internet material such as Wikipedia. As critical thinking purports to provide guidance for addressing the question of when to accept information from sources, criteria for evaluating sources put forward in critical thinking textbooks were summarized and applied to examples from Wikipedia. This evaluation proved problematic, and it was determined that these criteria might need to be applied differently, or perhaps supplemented by different criteria. In order to do this in a non-arbitrary manner a need for a foundational theory to guide the selection and application of these criteria was identified.

Work in the philosophy of education, in particular that of Siegel, provides theoretical grounding for the project of critical thinking. However, this theoretical grounding does not provide guidance at the practical level of criteria selection and application. There is thus a gap in the literature of the philosophy of education between the theoretical grounding of the critical thinking project itself and the criteria that are proposed in the context of this project. Outside of the philosophy of education the question of testimony, which involves the acceptance of a statement on the basis of another's say-so, has been a central issue in recent discussions in the epistemological literature. It was proposed that the epistemological theory of testimony might have the potential to at least partially bridge the gap between Siegel's epistemology and critical thinking practice, and to provide a more comprehensive foundational theory for the selection and

application of critical thinking criteria. The following question was set out as the statement of purpose for the dissertation: *What theoretical grounding can the current epistemological literature on testimony provide for critical thinking criteria that are applicable to knowledge claims such as those found in Wikipedia?*

Before exploring the literature on testimony, a more in-depth study of Wikipedia, based primarily on Wikipedia's policies and guidelines for practice was undertaken. This identified a number of features that can be used to characterize Wikipedia. The literature on testimony was then examined and different accounts of testimony in that literature were summarized. A general model of testimony was proposed, and standard case testimony (a statement in a conversation) and Wikipedia testimony (a statement in a Wikipedia article) were presented as examples of this general model. The accounts of testimony identified in the philosophical literature were then applied to critical thinking theory. This resulted in a proposed theory of critical thinking that includes the identification of a number of types of reasons that could be used in support of a claim and a three-staged approach for critical thinking to apply when evaluating a claim. The focus of this approach is on defeaters to a claim rather than on support for a claim. If there are no defeaters, the critical thinker can be granted warrant for accepting the claim. However, the critical thinker is responsible for monitoring both the claim and the context within which the claim is provided for defeaters. The critical thinker must determine which challenges presented by those defeaters require response, and what responses to these challenges are appropriate. The resulting responses constitute good reasons for accepting the claim.

Attention was then turned to criteria for critical thinking. Criteria provide guidance to critical thinkers on what they should look for when monitoring for, assessing, and responding to defeaters. Metacriteria and general criteria provide an overall framework for critical thinking, and apply to all normative discourse contexts. Context specific criteria are associated with the norms and practices of a particular normative discourse context. The recipient of testimony has a double duty when it comes to evaluation according to these criteria—first, to determine if the norms and practices of a particular normative discourse context are suitably robust so that claims offered in accordance with these norms and practices are acceptable, and second, to determine if these norms

and practices are being followed in the particular discourse event. The notion of appropriateness in these criteria takes account of the critical thinker's context. A technical notion of relevance was proposed to characterize this notion of appropriateness and to provide guidance to critical thinkers on what is appropriate when monitoring for, assessing, and responding to defeaters.

Once the proposed theory of critical thinking was in place Wikipedia specific criteria falling under the rubric provided by the general criteria were determined. Finally, the two examples from Wikipedia put forward at the beginning of the dissertation were re-examined in light of the these specific criteria as well as applicable general criteria from the theory. This re-examination led to the conclusion that the question posed by the statement of purpose set out earlier in the dissertation can be answered in the affirmative, and that the proposed testimony-based theory of critical thinking does provide guidance for the selection and application of criteria applicable to knowledge claims from non-traditional sources such as Wikipedia.

10.2 Summary of Definitions, Principles, and Criteria

Before moving on to look at the potential contributions of this dissertation to research and practice, a summary of the various definitions put forward in this dissertation will be put forward. These definitions include definitions of testimony, critical thinking reason types and principles, and proposed criteria:

Definitions of Testimony:

Testimony consists of a statement obtained by a recipient from a provider in a particular
discourse event according to the norms and practices of the normative discourse
context.

Standard case testimony consists of a statement obtained by a hearer from a speaker via a
conversation according to the norms and practices of conversation.

Wikipedia testimony consists of a statement obtained by a recipient from a provider via a
Wikipedia article according to the norms and practices of Wikipedia.

Reason Types:

RT1: Support for the statement itself.

RT2: Support for the credibility of the statement's provider.

RT3: Support for accepting testimony in general.

RT4: Support for the credibility of the normative discourse context by which the

statement was obtained.

RT5: Support for the reliability of the process by which the statement was obtained.

Principles for Critical Thinking

PR1: The critical thinker should monitor appropriately for potential defeaters.

PR2: The critical thinker should accept a statement in the absence of defeaters.

PR3: The critical thinker should appropriately evaluate the potential defeaters.

Normative Discourse Context Metacriteria

CM1: The normative discourse context should instantiate the general criteria for

testimony.

CM2: The norms and practices of the normative discourse context should be appropriate.

CM3: Statements from different normative discourse practices should be used together

only if those normative discourse practices have corresponding norms and

practices.

Normative Discourse Context General Criteria

CG1: The source should have appropriate expertise.

CG2: The source should demonstrate the appropriate functionality for and exercise of

diligence.

CG3: The source should be neutral or should not be biased in an inappropriate manner.

CG4: The source should be reputable.

CG5: The source should be reliable.

Normative Discourse Context Criteria—Wikipedia:

CW1: Providers should have secondary expertise.

CW2: Providers should abide by Wikipedia's policies and procedures.

CW3: Providers should make bias explicit and represent all significant viewpoints.

CW4a: Wikipedia should have a good reputation.

CW4b: Internal Wikipedia commentary should be positive.

CW5: Wikipedia should be reliable.

Normative Discourse Event Criteria:

CE1: The discourse event should be conducted according to the norms and practices of the normative discourse context.

CE2: The provider of a statement should abide by the norms and practices of the normative discourse context.

CE3: The statement should make sense in the context of what the recipient already knows

10.3 Contributions of this Dissertation

This section will look at what this dissertation can contribute to both theory and practice. The contributions on the theoretical level are in the philosophy of education and in the theory of critical thinking, and are of potential interest to philosophers of education and other education theorists. The contributions on the practical level have implications for both pedagogy and critical thinking practice, and are of potential interest to teachers and others involved in the practice of education, as well as to students as critical thinkers.

It was noted in Section 2.4 that Siegel's epistemology of critical thinking is arguably the most well-developed theory of critical thinking on offer. However, while Siegel provides theoretical justification for the critical thinking project he does not provide theoretical foundations for the selection and application of critical thinking criteria. A gap was thus identified between Siegel's epistemology and critical thinking practice, and the testimony-based theory of critical thinking proposed in this dissertation was developed with a view towards bridging this gap. The theory of critical thinking proposed in this dissertation builds on Siegel's epistemology of critical thinking, draws on the epistemology of testimony, and is coupled with a notion of relevance to take account of a critical thinker's particular situation. This proposed theory addresses the practice of critical thinking, and in particular, the selection and application of critical thinking

criteria. The claim here is that this theory provides at least a partial bridge of the gap between Siegel's epistemology of critical thinking and practice, and, as such, demonstrates that the current epistemological literature on testimony can provide theoretical foundations for criteria of acceptance in critical thinking.

The proposed testimony-based theory of critical thinking bridges this gap in two ways. First, the proposed theory provides guidance for the selection of critical thinking criteria by providing a theoretical context to determine types of "good reasons" that Siegel requires. These types of good reasons, in turn, were used to determine critical thinking criteria on three levels—metacriteria for evaluating normative discourse contexts, general criteria for application within normative discourse contexts, and criteria specific to a discourse event. While Siegel's theory focused on the role of critical thinking, its relationship with rationality, and the need for "good reasons," the proposed theory goes on to show how good reasons can be determined and how criteria to evaluate statements with reference to these good reasons can be established and applied. This theory follows Siegel, who notes that many criteria are discipline specific. As such, there is no claim that theory can be used to determine all critical thinking criteria, and in this sense the proposed theory only partially fills the gap between theory and practice. However, the proposed theory makes a connection between theory and practice by showing not only how general criteria can be formulated and applied, but by providing a theoretical basis for the selection of these discipline specific, or normative discourse specific, criteria.

Second, the proposed theory of critical thinking sets out a process for critical thinking that provides guidance for criteria application. Theories of testimony indicate that testimony should be treated as a source of knowledge along with introspection, perception, and memory. Although testimony, like these other sources of knowledge, is fallible, the approach this theory sets out is to treat testimony like these other sources of knowledge and grant an unchallenged statement initial acceptance while acknowledging its potential falsifiability. This initial acceptance does not constitute unqualified acceptance, but does demonstrates the theory's rejection of an approach whereby a statement is not accepted until a pre-determined level of support is assured. The proposed theory balances this initial acceptance with subsequent due

diligence regarding the possible falsehood of the statement by requiring the critical thinker to monitor for and respond to potential defeaters. The role of criteria is to identify potential defeaters and determine which of these potential defeaters need to be responded to before accepting the statement. This theory also addresses the complexity of a statement's source by enabling the critical thinker to identify and evaluate various components of the source. Finally, this theory introduces a notion of "appropriateness" along with a theory of relevance that enables the critical thinker to take account of his or her requirements when evaluating a statement, and to determine what support is available for a statement and when that support is sufficient.

Although this dissertation has focused on the theory of critical thinking, the initial motivation for exploring critical thinking theory was rooted in critical thinking practice. In particular, the initial challenge was to develop a theory of critical thinking that can provide guidance for a criteria-based practice of critical thinking that, in turn, is applicable to non-standard sources such as Wikipedia. Some suggestions can be made as to the practical implications of this proposed theory for both teachers of critical thinking and students as critical thinkers. It should be noted that these suggestions are not made with reference to existing work in critical thinking pedagogy outside the brief survey of critical thinking textbooks put forward in Section 2.2. As such, there is no claim here that the particular insights that these suggestions provide are new to pedagogy or to critical thinking practice and, as such, these suggestions do not constitute claims or prescriptions for education practice. Rather, they can be taken as suggestions for further investigation of the application of the testimony-based theory of critical thinking put forward in this dissertation to education practice.

This proposed theory has a number of potential implications for teachers and other educational practitioners. For example, the framework provided by this theory can used to determine what material should be brought into the classroom and how that material should be used. Without this or some similar framework the practitioner is left with two options regarding material that can be considered "questionable" by traditional standards—either to exclude that material, or to bring it in for the purpose of demonstrating its inadequacy when compared to traditional sources. This theory brings in considerations regarding the normative discourse

practices used in constructing that material. This, in turn, allows questions to be posed regarding the qualifications of the providers who created the material, the standards and practices used when the material was created, and to what extent those standards and practices were followed. This analysis provides a framework for both teachers and educators involved in curriculum design to use when determining how and to what purposes non-traditional sources such as Wikipedia should be used in an educational setting.

This theory provides the teacher with theoretical foundations that enable the consideration and evaluation of various types of sources, discussion of what sources are appropriate to what purposes, and how sources as well as individual statements should be evaluated. This theory also enables the teacher to provide a critical thinking framework for students that is applicable to both traditional classroom assignments, such as papers with cited references, and examples from the students' daily life. Rather than attempt to convince students to apply an identical critical thinking strategy to classroom assignments and to sources that they use outside the classroom, this theory provides a framework for teachers to compare the different situations the student might be in, and to discuss what sort of evaluation is appropriate in these different situations. For students, this supports a versatile concept of critical thinking that can be applied to different resources and in different situations. A potential problem could occur if students are taught critical thinking in a classroom context solely with reference to standard classroom assignments. This can lead them to think of critical thinking as a purely academic exercise that is only applicable in the artificial environment of the classroom. For example, many students rely on Wikipedia and other Internet resources in their day-to-day life, and turning them away from these resources in the classroom might give the message that critical thinking does not, or cannot, be applied to these resources.

The critical thinking process advocated here differentiates the evaluation of a source from the evaluation of a statement from that source, and provides students with a mechanism for comparing sources as well as statements. Critical thinkers are asked to pay attention to the norms and practices of a normative discourse practice and the provider's compliance with these norms and practices as well as to the statement itself. As a result, students might reject some sources that

they might have otherwise unquestionably accepted, and qualify their acceptance of statements from other sources. Second, the procedure set out by this theory takes account of the critical thinker's situation, and this enables the student as critical thinker to determine when it is appropriate to use a resource. Finally, the theory not only provides the critical thinker with a process for evaluating a statement, but for determining when that evaluation is complete and a statement should be either accepted or rejected. The result is a realistic and practical approach to critical thinking that students can apply in their daily life as well as in the classroom.

10.4 Further Research

The previous section set out a number of suggestions for how the proposed testimony-based theory of critical thinking could be applied by educational practitioners in curriculum design or in classroom teaching, and by students as critical thinkers. This section will look at other possible applications and extensions of this theory.

Chapter 9 illustrated how this theory could be applied to Wikipedia. Additional work on Wikipedia could extend the analysis in Chapter 3 to include a more detailed investigation of the context-specific criteria determined by Wikipedia's norms and practices. Application of the theory to other sources could further test and refine the theory. For example, the discussion in Chapter 9 noted that students are often directed to cite scholarly material but not Wikipedia, as scholarly publishing provides comprehensive and expert review while Wikipedia does not. A comparison of Wikipedia and scholarly publishing as normative discourse practices could investigate whether this expert review is the only, or the significant, difference between the two.

The theory could be further tested by using it to explore points of failure in sources that are considered to be less than fully reliable. For instance, the stance criteria could be tested by applying the theory's framework to sources that are suspected of presenting false or slanted information. Fox News, for example, claims to maintain an unbiased outlook, but has been criticized for biased reporting in order to promote the conservative perspective (Jones, 2012). By contrast, Conservapedia ("Conservapedia," n.d.), a resource created on the Wikipedia model, explicitly promotes the conservative viewpoint. A cursory look at these two resources might

conclude that Fox News does not meet the stance criterion of making bias explicit, while Conservapedia does meet this criterion. Further comparison of these two resources might lead to a different conclusion, or to further refinement of the stance criterion. Other normative discourse contexts that could be examined include the self-publishing industry. Self-published books, for example, are often written and published by experts and might meet the expertise and stance criteria. However, they might not meet the diligence criterion as they have not been subjected to the sort of editorial control that is expected of books published in the traditional publishing industry.

The proposed theory could also be used to explore issues such as social justice. For example, how can a normative discourse practice's stance be made explicit? Who benefits by the so-called "neutral stance" and who is disadvantaged? Might less diligence have been applied for political reasons rather than practical reasons such as time and resource availability? Some possible directions for this line of inquiry are suggested by two writers previously cited in this dissertation. Martin (1992), writing on critical thinking, makes a case that considerations such as active participation rather than just rational observation and analysis need to be included in a concept of critical thinking. M. Fricker (2006, 2009, 2010), writing on testimony, raises concerns regarding what she terms "epistemic injustice," which occurs when recipients are not properly sensitive to testimony from certain providers and wrongly assess those providers' credibility. Both of these directions could potentially be explored within the framework of the proposed testimony-based theory of critical thinking.

While this dissertation has applied philosophical theories of testimony to critical thinking, other philosophical approaches to critical thinking could be investigated. For example, Siegel suggested that further development of his theory could focus on philosophical questions around rationality, This direction is largely unexplored by this dissertation, and further consideration of theories of rationality might lead to refinements or perhaps even alternatives to the testimony-based theory of critical thinking proposed here. The concepts of distributed justification and knowledge put forward in some of the theories of testimony examined in Chapter 4 suggest other directions to explore. Goldberg's (2006a) "social diffusion of warrant," Schmitt's (2006)

"Transindividual Basing Thesis," and McMyler's (2007) "secondhand knowledge" consider justification, or warrant, to be distributed in the community. Communitarian views of knowledge advanced by Kusch (2002a, 2002b), Kusch & Lipton (2002), and Welbourne (1986, 1994, 2002) go even further, and view knowledge itself as distributed in a community. Aside from the discussion of secondary expertise, this direction was not pursued in this dissertation as the focus was on theories of testimony that provide reasons that individuals can have at their immediate disposal for making decisions on how to believe or act. Nonetheless, this does not discount the possibility that these ideas regarding distributed knowledge or justification could be used to develop an account of complex sources with multiple providers such as Wikipedia, and that an individual's approach to this distributed knowledge or justification could be incorporated into a theory of critical thinking.

This dissertation has put forward a testimony-based theory of critical thinking that can provide a framework for critical thinking practice. Whether or not this particular theory is adopted for this purpose, it is hoped, at the very least, that this dissertation has demonstrated the importance of theoretical foundations for critical thinking practice, and provided an example of the course that investigation into these foundations can pursue.

Cited References

About Wikipedia (n.d.). In *Wikipedia*. Retrieved August 2, 2010, from http://en.wikipedia.org/ wiki/Wikipedia:About

Adler, J. (1994). Testimony, trust, knowing. *Journal of Philosophy, 91*(5), 264-275. doi:10.2307/2940754

Adler, J. (2002). *Belief's own ethics*. Cambridge, MA: MIT Press.

Adler, J. (2003). Knowledge, truth, and learning. In R. Curren (Ed.), *A companion to the philosophy of education* (pp. 285-304). Oxford: Blackwell.

Adler, J. (2006). Epistemological problems of testimony. In E. N. Zalta (Ed.),*Stanford encyclopedia of philosophy* (Winter 2012 Ed.). Retrieved from https://leibniz.stanford.edu/friends/ members/view/testimony-episprob/

Arunachal Pradesh (n.d.). In *Wikipedia*. Retrieved October 13, 2012, from http://en.wikipedia.org/wiki/Arunachal_Pradesh

Audi, R. (2004). The a priori authority of testimony. *Philosophical Issues, 14*, 18-34. doi:10.1111/j.1533-6077.2004.00018.x

Audi, R. (2006). Testimony, credulity, and veracity. In J. Lackey & E. Sosa (Eds.), *The epistemology of testimony* (pp. 25-49). Oxford: Clarendon Press.

Beall, J. (2012). Predatory publishers are corrupting open access. *Nature, 489*, 179. doi:10.1038/489179a

Berthon, P.R., Pitt, L.F., Plangger, K. & Shapiro, D. (2012). Marketing meets Web 2.0, social media, and creative consumers: Implications for international marketing strategy. Business Horizens, *55*, 261-271. doi:10.1016/j.bushor.2012.01.007

Blair, J. A. (1992). The generalizability of critical thinking: The evaluation of sources. In S. P. Norris (Ed.), *The generalizability of critical thinking: Multiple perspectives on and educational ideal* (pp. 125-137). New York, NY: Teachers College Press.

Brandom, R. (1998). *Making it explicit*. Cambridge, MA: Harvard University Press.

Britannica attacks ... and we respond (2006). *Nature*, 440, 582. doi:10.1038/440582b

Broncano, F. (2008). Trusting others: The epistemological authority of testimony. *Theoria, 23*(61), 11-22. Retrieved from http://www.ehu.es/ojs/index.php/THEORIA/

Burbules, N. C. (1995). Reasonable doubt: Toward a postmodern defense of reason as an epistemic aim. In W. Kohi (Ed.), *Critical conversations in the philosophy of education* (pp. 82-102). New York, NY: Routledge.

Burge, T. (1993). Content preservation. *Philosophical Review*, *102*(4), 457-488. doi:10.2307/2185680

Burge, T. (1997). Interlocution, perception, and memory. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition, 86*(1), 21-47. doi:10.1023/A:1004261628340

Callahan, E. S. & Herring, S. C. (2011). Cultural bias in Wikipedia content on famous persons. *Journal of the American Society for Information Science and Technology, 62*(10): 1899-1915. doi:10.1002/asi.21577

Carter, J.A., Kallestrup, J., Palmeros, S.O., & Pritchard, D. (2014). Varieties of Externalism. *Philosophical Issues, 24*, 63-109. doi:10.1111/phil.12026

Cassel, L.N. & Austing, R. H. (2000). *Computer networks and open systems: An application development perspective*. Sudbury, MA: Jones and Bartlett.

Castells, M. (1996). *The rise of the network society*. Oxford: Blackwell.

Casullo, A. (2007). Testimony and a priori knowledge. *Episteme, 4*(3), 322-334. doi:10.1353/epi.0.0010

Chandler, C. & Gregory, A. (2010). Sleeping with the enemy: Wikipedia in the college classroom. *The History Teacher, 43*(2): 247-257. Retrieved from http://www.jstor.org/action/showPublication?journalCode=historyteacher

Chesney, T. (2006). An empirical examination of Wikipedia's credibility. *First Monday 11*(11). doi:10.5210/fm.v11i11.1413

Christensen, D. & Kornblith, H. (1995). Testimony, memory and the limits of the a priori. *Philosophical Studies, 88*(1): 1-20. doi:10.1023/A:1004268430546

Collins, H. & Evans, R. (2007). Rethinking Expertise. Chicago: University of Chicago Press.

Coady, C.A.J. (1992). *Testimony: A philosophical study*. Oxford: Clarendon Press.

Coady, C. A. J. (1994). Testimony, observation, and "autonomous knowledge." In B.K. Matilal, & A. Chakrabarti (Eds.), *Knowing from words: Western and Indian philosophical analysis of understanding and testimony* (pp. 225-250). Dorcrecht: Kluwer Academic.

Coady, C.A.J. (1998). Testimony. In E. Craig (Ed.), *Routledge Encyclopedia of Philosophy*. London: Routledge. Retrieved from https://www-rep-routledge-com/articles/testimony

Convervapedia (n.d.). Retrieved from http://www.conservapedia.com/

Couldry, N. (2009). Does 'the Media' have a future? *European Journal of Communication, 24*(4), 437-449. doi:10.1177/0267323109345604

Craig, E. (1990). *Knowledge and the state of nature*. Oxford: Oxford University Press.

Davidson, D. (1973). On the very idea of a conceptual scheme. *Proceedings and Addresses of the American Philosophical Association, 47*, 5-20. doi:10.2307/3129898

Day, M. (2008). Our relations with the past. *Philosophia: Philosophical Quarterly of Israel, 36*(4), 417-427. doi:10.1007/s11406-008-9127-7

Dewhurst, T. (2009). The epistemology of testimony: Fulfilling the sincerity condition. *South African Journal of Philosophy, 28*(2), 93-100. http://dx.doi.org/10.4314/sajpem.v28i2.46665

DeRose, K. (1992). Contextualism and knowledge attributions. *Philosophy and Phenomenological Research, 52*(4), 913-929. doi:10.2307/2107917

Dummett, M. (1994). Testimony and memory. In B. K. Matilal, & A. Chakrabarti (Eds.), *Knowing from words: Western and Indian philosophical analysis of understanding and testimony* (pp. 251-272). Dorcrecht: Kluwer Academic.

Elgin, C. (1984). Goodman's rigorous relativism. *Journal of Thought, 19*(4): 36-45. Retrieved from http://search.proquest.com/publication/publications_1820953

Elvebakk, B. (2008). Philosophy democratized? A comparison between Wikipedia and two other Web-based philosophy resources. *First Monday, 13*(2). http://dx.doi.org/10.5210/fm.v13i2.2091

Ennis, R. H. (1987). A taxonomy of critical thinking dispositions and abilities. In J. B. Baron & R. J. Sternberg (Eds.), *Teaching thinking skills: Theory and practice* (pp. 9-26). New York, NY: W. H. Freeman.

Ennis, R. H. (1989). The rationality of rationality: Why think critically? In R. Page (Ed.). *Philosophy of education 1989* (pp. 402-405). Urbana, IL: Philosophy of Education Society.

Ennis, R. H. (1996). *Critical thinking*. Upper Saddle River, NJ: Prentice Hall.

Fallis, D. (2008). Towards an epistemology of *Wikipedia*. *Journal of the American Society for Information Science and Technology, 59*(10): 1662-1674. doi:10.1002/asi.20870

Fallis, D. (2009). Introduction: The epistemology of mass collaboration. *Episteme*, *6*(1), 1-7. doi:10.3366/E1742360008000506

Faulkner, P. (2000). The social character of testimonial knowledge. *Journal of Philosophy, 97*(11), 581-601. doi:10.2307/2678453

Faulkner, P. (2002). On the rationality of our response to testimony. *Synthese, 131*(3), 353-370. doi:10.1023/A:1016116728471

Faulkner, P. (2007a). A genealogy of trust. *Episteme, 4*(3), 305-321. doi:10.3366/E174236000700010X

Faulkner, P. (2007b). On telling and trusting. *Mind: A Quarterly Review of Philosophy, 116*(464), 875-902. doi:10.1093/mind/fzm875

Faulkner, P. (2008). Cooperation and trust in conversational exchanges. *Theoria, 23*(61), 23-34. Retrieved from http://www.ehu.es/ojs/index.php/THEORIA/

Faulkner, P. (2010). Norms of trust. In A. Haddock, A. Millar, & D. Pritchard (Eds.), *Social epistemology* (pp. 51-68). Oxford: Oxford U. Press.

Faulkner, P. (2011). Epistemology of testimony. In M. Sbisa, J. Ostman & J. Verschueren (Eds.), *Philosophical perspectives for pragmatics* (pp. 82-85). Amsterdam: John Benjamins.

Fisher, A. (2001). *Critical thinking: An introduction*. Cambridge: Cambridge University Press.

Floridi, L. (2010). Information: A very brief introduction. Oxford: Oxford University Press.

Foley, R. (1994). Egoism in epistemology. In F. Schmitt (Ed.) *Social epistemology: The social dimensions of knowledge* (pp. 53-73). Lanham, MD: Rowman & Littlefield.

Freeman, J. B. (2005). *Acceptable premises*. New York, NY: Cambridge University Press.

Fricker, E. (1987). The epistemology of testimony. *Proceedings of the Aristotelian Society, Supplementary Volumes, 61*, 57-83. Retrieved from http://www.jstor.org/journals/03097013.html

Fricker, E. (1994). Against gullibility. In B. K. Matilal, & A. Chakrabarti (Eds.), *Knowing from words: Western and Indian philosophical analysis of understanding and testimony* (pp. 125-161). Dorcrecht: Kluwer Academic.

Fricker, E. (1995). Critical notice: Telling and trusting: Reductionism and anti-reductionism in the epistemology of testimony. *Mind, 104*, 393-411. doi:10.1093/mind/104.414.393

Fricker, E. (2002). Trusting others in the sciences: *a priori* or empirical warrant? *Studies in History and Philosophy of Science, 33*(2), 373-383. doi:10.1016/S0039-3681(02)00006-7

Fricker, E. (2004). Testimony: Knowing through being told. In I. Niiniluoto, M. Sintonen & J. Wolenski (Eds.), *Handbook of epistemology* (pp. 109-130). Dordrecht: Kluwer Academic.

Fricker, E. (2006). Second-hand knowledge. *Philosophy and Phenomenological Research, 73*(3), 592-618. doi:10.1111/j.1933-1592.2006.tb00550.x

Fricker, M. (2010). Scepticism and the genealogy of knowledge: Situating epistemology in time. In A. Haddock, A. Millar, & D. Pritchard (Eds.), *Social epistemology* (pp. 51-68). Oxford: Oxford U. Press.

Fricker, M. (2012). Group testimony? The making of a collective good informant. *Philosophy and Phenomenological Research, 84*(2): 249-276. doi:10.1111/j.1933-1592.2011.00565.x

Geiger, R. S. & Ribes, D. (2010). The work of sustaining order in Wikipedia: the banning of a vandal. In *Proceedings of the 2010 ACM conference on computer supported cooperative work*, 2010, pp. 117-126.

Gelfert, A. (2009). Indefensible middle ground for local reductionism about testimony. *Ratio (New Series), 22*, 170-190. doi:10.1111/j.1467-9329.2009.00424.x

Gettier, E. L. (1963). Is justified true belief knowledge? *Analysis, 23,* 121. doi:10.1093/analys/23.6.121

Giles, J. (2005). Internet encyclopaedias go head to head. *Nature, 438*, 900-901. doi:10.1093/analys/23.6.121

Goldberg, S. (2001). Testimonially based knowledge from false testimony. *The Philosophical Quarterly*, *51*, 512-526. doi:10.1111/1467-9213.00244

Goldberg, S. (2006a). Reductionism and the distinctiveness of testimonial knowledge. In J. Lackey. & E. Sosa (Eds.), *The epistemology of testimony* (pp. 127-144). Oxford: Clarendon Press.

Goldberg, S. (2006b). The social diffusion of warrant and rationality. *Southern Journal of Philosophy, 44* (Supplement), 118-138. doi:10.1111/j.2041-6962.2006.tb00034.x

Goldberg, S. (2007). *Anti-individualism: Mind and language, knowledge and justification*. Cambridge: Cambridge U. Press.

Goldberg, S. (2008). Testimonial knowledge in early childhood, revisited. *Philosophy and Phenomenological Research, 76*(1), 1-36. doi:10.1111/j.1933-1592.2007.00113.x

Goldberg, S. (2010a). The epistemology of silence. In A. Haddock, A. Millar, & D. Pritchard (Eds.), *Social epistemology* (pp. 243-261). Oxford: Oxford University Press.

Goldberg, S. (2010b). *Relying on others: An essay in epistemology*. Oxford: Oxford University Press.

Goldberg, S., & Henderson, D. (2006). Monitoring and anti-reductionism in the epistemology of testimony. *Philosophy and Phenomenological Research, 72*(3), 600-617. doi:10.1111/j.1933-1592.2006.tb00586.x

Goldman, A. I. (1999). *Knowledge in a social world*. Oxford: Clarendon Press.

Goldman, A. I (2011). A guide to social epistemology. In A. I. Goldman & D. Whitcomb (Eds.), *Social epistemology: Essential readings* (pp. 11-37). Oxford University Press.

Govier, T. (1987). *Problems in argument analysis and evaluation*. Dordrecht: Foris Publications.

Govier, T. (1993). Trust and testimony: Nine arguments on testimonial knowledge. *International Journal of Moral and Social Studies*, *8*(1), 21-39.

Graham, P. J. (1997). What is testimony? *Philosophical Quarterly*, *47*, 227-232. doi:10.1111/1467-9213.00057

Graham, P. J. (2000a). Conveying information. *Synthese, 123*, 365-392. doi:10.1023/A:1005162716568

Graham, P. J. (2000b). Transferring knowledge. *Nous, 34*(1), 131-152. doi:10.1111/0029-4624.00205

Graham, P. J. (2006a). Liberal fundamentalism and its rivals. In J. Lackey. & E. Sosa (Eds.), *The epistemology of testimony* (pp. 93-115). Oxford: Clarendon Press.

Graham, P. J. (2006b). Testimonial justification: Inferential or non-inferential? *Philosophical Quarterly, 56*(222), 84-95. doi:10.1111/j.1467-9213.2005.00430.x

Graham, P. J. (2010). Norms of trust. In A. Haddock, A. Millar, & D. Pritchard (Eds.), *Social epistemology* (pp. 51-68). Oxford: Oxford University Press.

Grice, P. (1991). *Studies in the way of words*. Cambridge, MA: Harvard University Press.

Greco, J. (2010). *Achieving knowledge: A virtue-theoretic account of epistemic normativity*. Cambridge: Cambridge University Press.

Mares, E. (2012). Relevance logic. In E. N. Zalta (Ed.), *Stanford encyclopedia of philosophy*. (Summer 2012 Ed.) . Retrieved from http://plato.stanford.edu/archives/sum2012/entries/logic-relevance/

Green, C. R. (n.d.). Epistemology of testimony. In J. Feiser & B. Dowden (Eds), *Internet encyclopedia of philosophy*. Retrieved from http://www.iep.utm.edu/eds/

Halavais, A. & Lackaff, D. (2008). An analysis of topical coverage of Wikipedia. *Journal of Computer-Mediated Communication, 13*, 429-440. doi:10.1111/j.1083-6101.2008.00403.x

Hardwig, J. (1985). Epistemic dependence. *Journal of philosophy, 82*, 335-349. doi:10.2307/2026523

Hariharakumar (October 23, 2009). Google Maps showing state part of two country. Retrieved October 23, 2009, from http://www.shoutmeloud.com/google-maps-showing-a-state-part-of-two-country.html

Harouni, H. (2009). High school research and critical literacy: Social studies with and despite Wikipedia. *Harvard Educational Review*, *79*(3), 473-493. Retrieved from http://hepg.org/her-home/home

Hartelius, E.J. (2010). Wikipedia and the emergence of dialogic expertise. *Southern Communication Journal, 75*(5), 505-526. doi:10.1080/10417940903377169

Henderson, D. (2008). Testimonial beliefs and epistemic competence. *Nous, 42*(2), 190-221. doi:10.1111/j.1468-0068.2008.00678.x

Hinchman, E. S. (2005). Telling as inviting to trust. *Philosophy and Phenomenological Research, 70*(3), 562-587. doi:10.1111/j.1933-1592.2005.tb00415.x

Hitchcock, D. (1983). *Critical thinking: A guide to evaluating information*. Toronto: Methuen.

Hume, D. (1748/1962). An inquiry concerning human understanding. In *On human nature and the understanding*. New York, NY: Collier.

Itanagar (n.d.). In *Wikipedia*. Retrieved March 8, 2010, from http://en.wikipedia.org/wiki/Itanagar

Jones, J.P. (2012). Fox News and the performance of ideology. *Cinema Journal, 51*(4), 178-185. doi:10.1353/cj.2012.0073

Keren, A. (2007). Epistemic authority, testimony, and the transmission of knowledge. *Episteme, 4*(3), 368-381. doi:10.3366/E1742360007000147

Kilby, R. J. (2004). Critical thinking, epistemic virtue, and the significance of inclusion: Reflections on Harvey Siegel's theory of rationality. *Educational Theory, 54*(3), 299-313. doi:10.1111/j.0013-2004.2004.00021.x

Kimmons, Royce. Understanding collaboration in Wikipedia. *First Monday 16*(12). doi:10.5210/fm.v16i12.3613

KNOW ... the vaccine controversy (n.d.). Retrieved March 8, 2010, from http://www.know-vaccines.org/controversy.html

Kupferberg, N. (2011). Accuracy and completeness of drug information in Wikipedia: An assessment. *Journal of the Medical Library Association, 99*(4): 310-313. doi:10.3163/1536-5050.99.4.010

Kusch, M. (2002a). *Knowledge by agreement*. Oxford: Oxford University Press

Kusch, M. (2002b). Testimony in communitarian epistemology. *Studies in History and Philosophy of Science, 33*(2), 335-354. doi:10.1016/S0039-3681(02)00008-0

Kusch, M., & Lipton, P. (2002). Testimony: A primer. *Studies in History and Philosophy of Science, 33*(2), 209-217. doi10.1016/S0039-3681(02)00003-1

Lackey, J. (2003). A minimal expression of non-reductionism in the epistemology of testimony. *Nous, 37*(4), 706-723. doi:10.1046/j.1468-0068.2003.00457.x

Lackey, J. (2006). It takes two to tango: Beyond reductionism and non-reductionism in the epistemology of testimony. In J. Lackey. & E. Sosa (Eds.), *The epistemology of testimony* (pp. 127-144). Oxford: Clarendon Press.

Lackey, J. (2008). *Learning from words: Testimony as a source of knowledge*. Oxford: Oxford University Press

Lackey, J. (2011a). Testimonial knowledge. In S. Bernecker, & D. Pritchard (Eds.), *Routledge companion to epistemology* (pp. 316-325). London: Routledge.

Lackey, J. (2011b). Testimony: Acquiring knowledge from others. In A. I. Goldman & D. Whitcomb (Eds.), *Social epistemology: Essential readings* (pp. 71-91). Oxford: Oxford University Press.

Lehrer, K. (2006). Testimony and trustworthiness. In J. Lackey & E. Sosa (Eds.), *The epistemology of testimony* (pp. 145-159). Oxford: Clarendon Press.

Lih, A. (2004). Wikipedia as participatory journalism: Reliable sources? *Proceedings of the 5th International Symposium on Online Journalism.* University of Texas, Austin, April 16-17.

Lih, A. (2009). *The Wikipedia revolution*. New York, NY: Hyperion.

Lipton, P. (1998). The epistemology of testimony. *Studies in History and Philosophy of Science, 29(1*), 1-31. doi:10.1016/S0039-3681(97)00022-8

Longino, H. (2002). *The fate of knowledge*. Princeton, NJ: Princeton University Press.

Loveland, J. & Reagle, J. (2013). Wikipedia and encyclopedia production. New Media & Society, 15(8), 1294-1311. doi:10.1177/1461444812470428

Lucassen, T. & Schraagen, J. M. (2011). Evaluating WikiTrust: A trust support tool for Wikipedia. *First Monday 16*(5). doi:10.5210/fm.v16i5.3070

Lucassen, T. & Schraagen, J. M. (2012). Propensity to trust and the influence of source and medium cues in credibility evaluation. *Journal of Information Science 38*(6), 566-577. doi:10.1177/0165551512459921

Lyons, J. (1997). Testimony, induction and folk psychology. *Australasian Journal of Philosophy*, 75(2), 163-178. doi:10.1080/00048409712347771

Mackie, J. L. (1970). The possibility of innate knowledge. *Proceedings of the Aristotelian Society, New Series, 70*, 245-257. Retrieved from http://www.jstor.org/action/showPublication?journalCode=procarissoci

Malmgren, A. (2006). Is there a priori knowledge by testimony? *Philosophical Review, 115*(2), 199-241. doi:10.1215/00318108-115-2-199

Mares, E. (2012). Relevance logic. In E. N. Zalta (Ed.), *Stanford encyclopedia of philosophy*. (Summer 2012 Ed.) . Retrieved from http://plato.stanford.edu/archives/sum2012/entries/logic-relevance/

Matei, S. A. & Dobrescu, C. (2010). Wikipedia's "neutral point of view": Settling conflict through ambiguity. *The Information Society*, *27*, 40-51. doi:10.1080/01972243.2011.534368

Martin, J. R. (1992). Critical thinking for a humane world. In S. Norris (Ed.), *The generalizability of critical thinking* (pp. 163-180). New York, NY: Teachers College Press.

McCarthy, C. (1994). We don't have a theory of rationality and we never will: A philosophically pragmatic view. In M. S. Katz (Ed.). *Philosophy of education 1994* (pp. 74-82). Urbana, IL: Philosophy of Education Society.

McMyler, B. (2007). Knowing at second hand. *Inquiry: An Interdisciplinary Journal of Philosophy, 50*(5), 511-540. doi:10.1080/00201740701612390

McPeck, J. (1990). *Teaching critical thinking: Dialogue and dialect*. New York, NY: Routledge.

Messer-Kruse, T. (2012). The 'Undue weight' of truth on Wikipedia. *The Chronicle Review*, February 12, 2012. Retrieved from http://chronicle.com/article/The-Undue-Weight-of-Truth-on/130704

Michaelian, K. (2008). Testimony as a natural kind. *Episteme: A Journal of Social Epistemology, 5*(2), 180-202. doi:10.3366/E1742360008000312

Moran, R. (2006). Getting told and being believed. In J. Lackey & E. Sosa (Eds.), *The epistemology of testimony* (pp.272-306). Oxford: Clarendon Press.

Nagel, T. (1986). *The View from nowhere*. New York, NY: Oxford University Press.

Neta, R. (2010). Can a priori entitlement be preserved by testimony? In A. Haddock, A. Millar, & D. Pritchard (Eds.), *Social epistemology* (pp. 194-215). Oxford: Oxford University Press.

NewsDiffs (n.d.). Retrieved from http://newsdiffs.org/

Olson, D.R. (1994). *The world on paper: The conceptual and cognitive implications of writing and reading*. Cambridge: Cambridge University Press.

Ong, W.J. (1982). *Orality and literacy: The technologizing of the word*. London: Methuen.

Origgi, G. (2008). Trust, authority and epistemic responsibility. *Theoria, 23*(61), 35-44. Retrieved from http://www.ehu.es/ojs/index.php/THEORIA/

Owens, D. (2006). Testimony and assertion. *Philosophical Studies, 130*, 105-129.

Pettit, P. (2006a). No testimonial route to consensus. *Episteme: A Journal of Social Epistemology, 3*(3), 156-165. doi:10.3366/epi.2006.3.3.156

Pettit, P. (2006b). When to defer to majority testimony—and when not. *Analysis, 66*(291), 179-187. doi:10.1093/analys/66.3.179

Pink, D. (2005). The book stops here. *Wired, 13*(3). Retrieved from http://archive.wired.com/wired/archive/13.03/wiki_pr.html

Pfister, D. S. (2011). Networked expertise in the era of many-to-one communication: On Wikipedia and invention. *Social Epistemology, 25*(3), 217-231. doi:10.1080/02691728.2011.578306

Potthast, M. (2010). Crowdsourcing a wikipedia vandalism corpus. In *Proceedings of the 33rd international ACM SIGIR conference on research and development in information retrieval*, 2010, pp. 789-790.

Pritchard, D. (2004). The epistemology of testimony. *Philosophical Issues, 14*, 326-348.

Purcell, K., Rainie, L., Heaps, A., Buchanan, J., Friedrich, L., Jacklin, A., ... Zickuhr, K. (2012). *How Teens do research in the digital world*. Retrieved from http://www.pewinternet.org/~/media//Files/Reports/2012/PIP_TeacherSurveyReportWithMethodology110112.pdf

Rajagopalan, M. [et al] (2011). Patient-oriented cancer information on the Internet: a comparison of Wikipedia and a professionally maintained database. *Journal of Oncology Practice, 7*(5), 319-324. doi:10.1200/JOP.2010.000209

Read, B. (2006). Can Wikipedia ever make the grade? *Chronicle of Higher Education,* October 27, 2006. Retrieved from http://chronicle.com/article/Can-Wikipedia-Ever-Make-the/26960

Reagle, J. M. (2010). *Good faith collaboration: The culture of Wikipedia*. Cambridge, MA: MIT Press.

Reavley, N. J. [et a] (2012). Quality of information sources about mental disorders: a comparison of Wikipedia with centrally controlled web and printed sources. *Psychological Medicine, 42*(8), 1753-1763. doi:10.1017/S003329171100287X

Relevant (2014). In *The American heritage dictionary of the English language* (5th ed.). Retrieved from http://www.ahdictionary.com/word/search.html?q=relevant

Reid, T. (1764/1967). Inquiry into the human mind. In *Philosophical works, v.I.* Hildesheim: Georg Olms Verlagsbuchhandlung.

Reynolds, S. L. (2002). Testimony, knowledge, and epistemic goals. *Philosophical Studies*, *110*, 139-161. doi:10.1023/A:1020254327114

Robertson, E. (2009). The epistemic aims of education. In H. Siegel (Ed.), *The Oxford handbook of philosophy of education* (pp. 11-34). Oxford: Oxford University Press.

Ross, A. (1986). Why do we believe what we are told? *Ratio, 28*(1), 69-88.

Rosen, R. J. (2012). Does Wikipedia have an accuracy problem? *The Atlantic*, February 16, 2012. Accessed July 22, 2012 from http://www.theatlantic.com/technology/archive/2012/02/does-wikipedia-have-an-accuracy-problem/253216/

Sanger, L. M. (2000). *Epistemic circularity: An essay on the problem of meta-justification* (Doctoral dissertation). Retrieved from *ProQuest Dissertations and Theses* (9971634).

Sanger, L. M. (2009). The fate of expertise after wikipedia. *Episteme: A Journal of Social Epistemology*, *6*(1), 52-73. doi:10.3366/E1742360008000543

Schmitt, F. E. (2006). Testimonial justification and transindividual reasons. In J. Lackey & E. Sosa (Eds.), *The epistemology of testimony* (pp.193-224). Oxford: Clarendon Press.

Schmitt, F. E.. (2010). The assurance view of testimony. In A. Haddock, A. Millar, & D. Pritchard (Eds.), *Social epistemology* (pp. 216-242). Oxford: Oxford Univeristy Press.

Selman, M. (1988). Ideology and what? A response to Harvey Siegel. *Educational Theory, 38* (2), 261-265. doi:10.1111/j.1741-5446.1988.00261.x

Sellars, W. (1979). Givenness and explanatory coherence. In G.S. Pappas (Ed.), *Justification and Knowledge* (pp. 169-182). Dordrecht: Reidel.

Shapin, S. (1992). *A social history of truth*. Chicago, IL: University of Chicago Press.

Shirky, C. (2008). *Here comes everybody: The power of organizing without organizations*. New York: Penguin.

Shogenji, T. (2006). A defense of reductionism about testimonial justification of beliefs. *Nous, 40*(2), 331-346. doi:10.1111/j.0029-4624.2006.00612.x

Siegel, H. (1985). Education reasons: Critical thinking, informal logic, and the philosophy of education. Part two: Philosophical questions underlying education for critical thinking. *Informal Logic, 7*: 69-81.

Siegel, H. (1987). *Relativism refuted: A critique of contemporary epistemological relativism*. Dorcrecht: D. Reidel.

Siegel, H. (1988). *Educating reason: Rationality, critical thinking, and education*. New York, NY: Routledge.

Siegel, H. (1989a). Epistemology, critical thinking and critical thinking pedagogy. *Argumentation, 3*(2), 127-140. doi:10.1007/BF00128144

Siegel, H. (1989b). Why be rational? On thinking critically about critical thinking. In R. Page (Ed.). *Philosophy of education 1989* (pp. 392-401). Urbana, IL: Philosophy of Education Society.

Siegel, H. (1992a). The generalizability of critical thinking skills, dispositions, and epistemology. In S. P. Norris (Ed.), *The generalizability of critical thinking: Multiple perspectives on an educational ideal* (pp. 97-109). New York, NY: Teachers College Press.

Siegel, H. (1992b). The Limits of *a priori* philosophy. *Studies in Philosophy and Education, 11*, 265-284. doi:10.1007/BF00402600

Siegel, H. (1999). Knowledge, truth and education. In D. Carr (Ed.), *Education, knowledge & truth: Beyond the post-modern impasse* (pp. 19-35). Florence, KY: Routledge.

Siegel, H. (2005a). Neither Humean nor (fully) Kantian be: Reply to Cuypers. *Journal of Philosophy of Education, 39*(3), 535-547. doi:10.1111/j.1467-9752.2005.00452.x

Siegel, H. (2005b). Truth, thinking, testimony and trust: Alvin Goldman on epistemology and education. *Philosophy and Phenomenological Research, 71*(2), 345-366. doi:10.1111/j.1933-1592.2005.tb00452.x

Siegel, H. (2007). Multiculturalism and rationality. *Theory and Research in Education, 5*(2), 203-223. doi:10.1177/1477878507077735

Sosa, E. (1994). Testimony and coherence. In B. K. Matilal & A. Chakrabarti (Eds.), *Knowing from words: Western and Indian philosophical analysis of understanding and testimony* (pp. 59-67). Dorcrecht: Kluwer Academic.

Sperber, D. & Wilson, D. (1986a). Loose talk. *Proceedings of the Aristotelian Society, New Series,86,* 153-171. Retrieved from http://www.jstor.org/journals/03097013.html

Sperber, D. & Wilson, D. (1986b). *Relevance. Communication and Cognition.* Oxford: Blackwell.

Strawson, P. F. On referring. *Mind, 59*(235), 320-344. doi:10.1093/mind/LIX.235.320

Stvilia, B., Twidale, M., Smith, L., & Gasser, L. (2008). Information quality work organization in Wikipedia. *Journal of the American Society for Information Science and Technology, 59*(6) 983-1001. doi:10.1002/asi.20813

Surowiecki, J. (2005). *The wisdom of crowds*. Toronto, Anchor Books.

Thagard, P. (2005). Testimony, credibility, and explanatory coherence. *Erkenntnis: An International Journal of Analytic Philosophy, 63*(3), 295-316. doi:10.1007/s10670-005-4004-2

Tollefsen, D. (2007). Group testimony. *Social Epistemology, 21*(3): 299-311. doi:10.1080/02691720701674163

Tollefsen, D. P. (2009). Wikipedia and the epistemology of testimony. *Episteme: A Journal of Social Epistemology, 6*(1), 8-24. doi:10.3366/E1742360008000518

Thomas, G. (2011). A typology for the case study in social science following a review of definition, discourse and structure. *Qualitative Inquiry, 17*(6), 511-521. doi:10.1177/1077800411409884

Tiwari, N. (2007, April 5). Newsmaker: Wikipedia today, Citizendium tomorrow. *CNET News.* Retrieved from http://news.cnet.com/2008-1082_3-6173499.html

Traiger, S. (2010). Experience and testimony in Hume's philosophy. *Episteme, 7*(1), 42-57. doi:10.3366/E174236000900080X

Vaccine controversy (n.d.). In *Wikipedia*. Retrieved March 8, 2010, from http://en.wikipedia.org/
wiki/Vaccine_controversy

Van Cleve, J. (2006). Reid on the credit of human testimony. In J. Lackey & E. Sosa (Eds.), *The
epistemology of testimony* (pp. 50-74). Oxford: Oxford University Press.

Van Fraassen, B. (1980). *The scientific image*. Oxford: Oxford University Press.

Viegas, F., Wattenberg, M. & Kushal, D. (2004). Studying cooperation and conflict between
authors with history flow visualizations. In *Proceedings of the SIGCHI conference on
human factors in computing systems, 2004*, pp. 575-584.

Wald, M. L. (2011, February 8). Electronic flaws did not cause Toyota problems, U.S. says. *The
New York Times*. Retrieved from http://www.nytimes.com

Weinstein, M. (1992). Reason and refutation: A review of two recent books by Harvey Siegel.
Studies in Philosophy and Education, 11, 231-263. doi:10.1007/BF00402599

Weinstein, M. (2003). Some foundational thoughts on critical thinking practice. In D. Fasko
(Ed.). *Critical thinking and reasoning: Current research theory and practice* (pp. 273-
289). Cresskill, NJ: Hampton Press.

Welcome to Citizendium (n.d.). In *Citizendium*. Retrieved March 3, 2015, from
http://en.citizendium.org/wiki/Welcome_to_Citizendium

Welbourne, M. (1986). *The community of knowledge*. Aberdeen: Aberdeen University Press.

Welbourne, M. (1994). Testimony, knowledge and belief. In B. K. Matilal & A. Chakrabarti
(Eds.), *Knowing from words: Western and Indian philosophical analysis of understanding
and testimony* (pp. 297-313). Dorcrecht: Kluwer Academic.

Welbourne, M. (2002). Is Hume really a reductivist? *Studies in History and Philosophy of Science,
33*(2), 407-423. doi:10.1016/S0039-3681(02)00009-2

Wikipedia: Counter-vandalism unit (n.d.). In *Wikipedia*. Retrieved September 26, 2012, from
http://en.wikipedia.org/wiki/Wikipedia:CVU

Wikipedia: Neutral point of view (n.d.) In *Wikipedia*. Retrieved August 2, 2010, from
http://en.wikipedia.org/wiki/Wikipedia:Neutral_point_of_view

Wikipedia: Researching with Wikipedia (n.d.) In *Wikipedia*. Retrieved August 14, 2010, from
http://en.wikipedia.org/wiki/Wikipedia:Researching_with_Wikipedia

Wikipedia: Size of Wikipedia (n.d.). In *Wikipedia*. Retrieved October 4, 2013, from
http://en.wikipedia.org/wiki/Size_of_Wikipedia

Wikipedia: Verifiability (n.d.). In *Wikipedia*. Retrieved October 4, 2013, from
http://en.wikipedia.org/wiki/Wikipedia:Verifiability

Wikipedia: WikiProject Council (n.d.). In *Wikipedia*. Retrieved October 13, 2012, from

http://en.wikipedia.org/wiki/Wikipedia:WikiProject_Council

Wikstrom, P. & Ellonen, H. (2012). The impact of social media features on print media firms'
online business models. *Journal of Media Business Studies, 9*(3): 53-80.
doi:10.1080/16522354.2012.11073552

Williams, B. (2002). *Truth and truthfulness*. Princeton, NJ: Princeton University Press.

Williams, M. (2008). Responsibility and reliability. *Philosophical Papers, 37*: 1-26.
doi:10.1080/05568640809485212

Wilson, D. & Sperber, D. (2006). Relevance theory. In R. Horn & G. Ward (eds.). *The handbook
of pragmatics*. Oxford: Blackwell.

Wilson, D. & Sperber, D. (2002). Truthfulness and relevance. *Mind, 111* (443): 583-632.
doi:10.1093/mind/111.443.583

Wilson, D. & Sperber, D. (2012). *Meaning and relevance*. Oxford: Cambridge University Press.

Wilson, F. (2010). Hume and the role of testimony in knowledge. *Episteme. 7*(1): 58-78.
doi:10.3366/E1742360009000811

Wright, S. (2011). Hume on testimony: A virtue-theoretic defense. *History of Philosophy
Quarterly, 3*(28): 247-265. Retrieved from http://hpq.press.illinois.edu

Xu, Y. & Wang, P. (2012). The frame problem, the relevance problem, and a package solution to
both. *Synthese, 187*: 43-72. doi:10.1007/s11229-012-0117-8

Zickuhr, K. and Rainie, L. (2011). *Wikipedia, past and present: 42% of all Americans turn to the
popular collaborative encyclopedia for information online*. Retrieved from
http://www.pewinternet.org/Reports/2011/Wikipedia.aspx