EDUCATION AND KNOWLEDGE

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ABSTRACT: In this paper, I challenge a traditional assumption concerning the nature and aims of education. According to epistemic infallibilism, propositional knowledge requires epistemic certainty. Though some philosophers accept infallibilism, others consider it implausible because it does not recognize ordinary cases of supposed knowledge. On this objection, we possess many items of propositional knowledge, notwithstanding the fallibleness of these items. Infallibilism is inconsistent with such items and thus considered unwarranted. I articulate this kind of objection to infallibilism as it concerns education. I then offer a cumulative case defense of infallibilism and evaluate that defense. This examination suggests that much of what we commonly consider as education does not provide knowledge, and therefore that the traditional assumption is incorrect. My paper has interdisciplinary interests with respect to epistemology, philosophy of education, philosophy of science, and pedagogical practice.

KEYWORDS: aporetics, infallibilism, education, knowledge, justification, certainty

1. Introduction, Assumptions, and Key Terms

According to Harvey Siegel (2009, 3), philosophy of education is the branch of philosophy that addresses questions concerning the nature, aims, and problems of education. Regarding the nature of education, some hold that education is essentially a matter of acquiring propositional knowledge. As P. H. Hirst and R. S. Peters (2012, 13) note, to educate someone is to develop in that person states of mind which involve knowledge. On this view, the very concept of 'education' indicates the acquisition of knowledge (2012, 19).

Concerning the aims of education, as Emily Robertson (2009, 12) writes, "it seems reasonable to assume that acquiring propositional knowledge is a major aim of education." Siegel (2018) states that the majority of historically significant philosophers of education have held that such knowledge is a basic epistemic aim of education. According to Alessia Marabini and Luca Moretti (2020, 492), philosophers have recently asserted that the aims of education include the attainment of knowledge and similar epistemic goods such as true belief and justified belief. Jonathan Adler (2003, 285) agrees, citing Alvin Goldman: "Education, especially liberal education, aims at transmitting knowledge." Adler calls this "the traditional view." I will adopt this title to refer to the claim that the acquisition of

propositional knowledge is part of the nature and epistemic aims of education. I will assume *arguendo* that this is a traditional assumption in the philosophy of education.

We speak of being educated concerning propositional knowledge and know-how. Academic education is an example of the former; vocational education of the latter.[1] In this paper, I emphasize academic education in an effort to scrutinize epistemic infallibilism (EI). This scrutiny raises an *aporia* which, according to Nicholas Rescher (2009, 106), is where philosophical deliberation starts. I then defend EI and show that this defense challenges the traditional assumption about education, suggesting either that is false or that if true, we cannot be educated in many important subjects.

I assume the following working definition of *academic education*: the result of a process of systematic instruction by which one obtains propositional knowledge. This process occurs at the primary, secondary, and university levels. The definition is consistent with the traditional view. I therefore construe the traditional view as holding that the nature and aims of *academic education* (as opposed to vocational education) involve the attainment of propositional knowledge. On this definition, the verb 'educate' is factive and thus 'academic education' is a term of success; i.e., for one to be educated in some academic discipline, one must acquire propositional knowledge about that discipline. For instance, suppose a student completes an academic course with a passing grade yet fails to obtain propositional knowledge about the subject of the course. In this case, the student is not academically educated in that subject, despite credit received in the course. And if a student obtains propositional knowledge about the subject, yet does not complete a formal academic course in that subject, then the student is academically educated in that subject. Being academically educated in subject S entails having propositional knowledge about S.

By "propositional knowledge" I mean *knowledge that*, or knowledge of the informational content of a declarative sentence. Roughly, propositional knowledge is at least a matter of justified, true belief (JTB). I will elaborate on JTB below. By "know-how" I mean the cognitive and perhaps corresponding physical ability to perform some action. By "self-knowledge" I mean immediate awareness of one's own mental states such as thought, belief, desire, or sensation.

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[1] It should be noted that know-how is obtained in academic education and propositional knowledge is acquired in vocational education. For instance, a university student in a history class might learn how to do historiography; a college student of logic might learn how to construct a deductive syllogism; a student in a vocational course for electricians might obtain propositional knowledge about physics.

In epistemology, Gettier problems indicate that propositional knowledge is more than JTB. It appears that some additional property which makes a belief immune to Gettier challenges is needed. The general structure of such problems suggests that Gettier-style cases contain unacceptably fallible justification and/or epistemic luck. With respect to an item of JTB, the presence of either factor prevents that item from counting as propositional knowledge.

One proposal for handling Gettier problems is to adopt epistemic certainty as a necessary condition for knowledge.[2] Let us call this "Infallibilism Thesis$_1$" (IT$_1$). On IT$_1$, if Jones knows that p, then: (a) p is true; (b) Jones believes that p; and (c) Jones' belief that p rests on infallible justification (i.e., p is epistemically certain for Jones). Put more succinctly, if Jones knows that p, then Jones believes that p and the belief that p is epistemically certain for Jones.

There are different versions of infallibilism; a common one might be called *internalistic infallibilism*. This version holds that epistemic certainty is a matter of having beliefs that are true *a priori* and knowable by rational intuition, or are matters of self-awareness and thus properly basic beliefs. In sum, the infallibilist holds that knowledge is as Robert Fogelin (1994, 28) states: "S knows that p iff S justifiably came to believe that p on grounds that establish the truth of p."

IT$_1$ is a normative thesis: infallibility is requisite for propositional knowledge. Since infallibility is incompatible with fallibility and with epistemic luck, the inclusion of epistemic certainty as a necessary condition for propositional knowledge enables advocates of IT$_1$ to avoid Gettier problems. Given the points in this introductory section, I turn to a discussion of the aporetics of EI with respect to academic education.

2. An Aporetic Tetrad

Consider the aporetic tetrad below. "S" refers to some academic subject which is not wholly a matter of mathematics, logic, moral intuition, or self-knowledge.

1. There is some human person who possesses an academic education in S.

2. The possession of an academic education in S entails the possession of propositional knowledge about S.

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2 Roughly, to say that p is epistemically certain for S is to say that S cannot be wrong that p given S's evidence e for p. This position is called epistemic infallibilism (EI). Several contemporary philosophers have argued for EI. For example, Julien Dutant (2016) supports EI and holds that it avoids Gettier problems. Fred Dretske (2015) also argues for something like EI, holding that if one knows that p, then one cannot be wrong that p given one's reasons for p. Dretske notes that this is a lesson from Gettier's paper. I will note additional advocates for EI later in the paper.

3. The possession of propositional knowledge about S entails epistemic infallibility about S.

4. No human person possesses epistemic infallibility about S.

Each limb of this tetrad is defensible, yet it cannot be the case that all are true. The statements are collectively inconsistent such that if any three are true, the fourth is false. Consider arguments for each limb, starting with (1), which is empirically defensible.

According to the U.S. Department of Education National Center for Education Statistics (NCES) (2022), in 2018-2019 in the U.S., 160,600 bachelor's degrees were awarded in the social sciences and history, 121,200 bachelor's degrees in the biological and biomedical sciences, and 116,500 bachelor's degrees in psychology. These degrees were conferred by postsecondary institutions recognized by the U. S. Department of Education. Such recognition indicates that the institutions provide academic education to students, and thus at least some of the degree recipients are educated in their respective disciplines. If we consider the cumulative number of bachelor's degrees awarded in these disciplines in 2018-2019, it is plausible that there is at least one person who possesses an academic education in S. Moreover, according to the American Academy of Arts and Sciences (AAA&S) (2021), 202,665 bachelor's degrees in the humanities were conferred in the U. S. in 2018. Again, it is reasonable to conclude that at least one of the degree recipients is academically educated in S.

Given the working definition of *academic education* in Section 1 and the traditional assumption on the nature and aims of education, arguably, (2) is true by definition. For the sake of space, I will say nothing more in defense of (2) here. However, I will revisit (2) in Section 7.

(3) is a version of EI. Nevin Climenhaga (2021) has argued that EI explains eight plausible and philosophically significant theses about propositional knowledge better than Epistemic Fallibilism (EF) does. EF (both the invariant and the contextualist kinds) holds that knowledge is consistent with possessing justification that is probable to some degree greater than .5 but less than 1. Hence, on EF, knowledge that p is consistent with the possibility of being wrong that p given one's evidence for p. The advocate of EF holds that one can *know that p* and at the same time lack *epistemic certainty that p*. The EF-advocate need not view epistemic certainty as a different kind of epistemic status. Rather, epistemic certainty can be construed as the highest degree of justification and thus the highest form of knowledge. For example, Roderick Chisholm (1989, 10-12) takes epistemic certainty to be the highest level on a range between that which is probable and that which is certain.

Climenhaga presents an abductive argument that, compared to EF, EI is a better explanation for the following eight claims: (a) there is a qualitative difference between knowledge and non-knowledge; (b) knowledge is valuable in a way that non-knowledge is not; (c) subjects in Gettier cases do not have knowledge; (d) if S knows that p, then p is part of S's evidence; (e) if S knows that p, then $\tilde{}p$ is epistemically impossible for S; (f) if S knows that p, then S can rationally act as if p; (g) if S knows that p, then S can rationally stop inquiring whether p; (h) if S knows each of $\{p_1, p_2, \ldots p_n\}$, and competently deduces q from these propositions, then S knows that q. Given the explanatory power and scope of EI, one is reasonable in accepting IT_1.

There are additional reasons to support EI. Arguably, EI avoids a vagueness problem that faces EF. What constitutes a sufficient degree of epistemic justification? Supposing one can accurately represent this degree with a number, which is debatable, should one select an epistemic probability of .501? Is it .7? Perhaps .9? For any answer, it seems a sorites problem looms. One might ask "Why *that* number? Is the selection of that number arbitrary?" Infallibilists can answer that 1 is the only non-arbitrary number; only an epistemic probability of 1 is sufficient for completely reliable justification, since anything less permits the possibility of error and therefore is unreliable to some degree. For instance, suppose that there is a jar of 500 jelly beans. You know that the jar contains 499 red beans and one blue bean. Without looking, you reach into the jar and grab one bean. You are reasonable to claim that the bean is red; after all, the probability is .998. Yet improbable events occur. You could be wrong: the bean might be blue. The infallibilist can say that only an epistemic probability of 1 is sufficient for reliable justification. Anything less is arbitrary and unreliable to some degree.

Further, only an epistemic probability of 1 is adequate to avoid taking an arbitrary position concerning the problem of epistemic luck. How much luck is too much for a JTB to count as knowledge? For any number selected as a limit, the question of arbitrariness arises. The infallibilist can avoid this problem: any luck at all is too much; only an epistemic probability of 1 is adequate to avoid the luck problem. If one has epistemic certainty for one's belief, then no epistemic luck threatens one's belief.

There are also problems of encroachment to consider. Take a modification of the jelly bean case. Suppose you know that you are severely allergic to blue jelly beans, but not to red ones. Blue beans are a risk to your life. Hence, the stakes are high. Is a probability of .998 good enough if a probability of 1 is available? Arguably, one is rational to look at the selected bean to confirm it is not blue, and even to ask a friend for a second look. This is a problem of pragmatic encroachment which

counts in favor of infallibilism. If one's probability is 1, there is no need to confirm the color of the bean. There are similar problems of moral and religious encroachment which support infallibilism. As Panayot Butchvarov (1970, 270-71) puts it, "Where the truths in question are of the greatest importance, as philosophical truths usually are, where what is at issue is the immortality of the soul and the possibility of eternal damnation, the existence of an external world, of other persons, of God, or of a real past, mere evidence, however, good, is not enough – it is knowledge, impossibility of error, that we demand."

Consider also the Meno Problem, which is relevant to Climenhaga's claim (b). In Plato's *Meno*, Socrates and Meno discuss the nature of knowledge. Meno asks about the difference between knowledge and true belief. He wonders if there is a real difference, and assuming there is, why knowledge is better. Socrates responds by comparing true belief to one of Daedalus' statues. The statues are beautiful, but not grounded and hence might move away. Thus, they are more valuable if tethered. Similarly, a true belief is good but falls short of knowledge. Knowledge has greater value because it is rationally grounded, whereas true belief is ungrounded. According to Socrates, knowledge is true belief plus a reasonable justification to ground the belief.

> True opinions are a fine thing and do all sorts of good so long as they stay in their place, but they will not stay long. They run away from a man's mind; so, they are not worth much until you tether them by working out the reason… Once they are tied down, they become knowledge, and are stable. That is why knowledge is something more valuable than right opinion. What distinguishes one from the other is the tether. (Plato, 2009, 381-382)

What is the tether? It is a reason or justification that *reliably* holds the belief in place. Plausibly, epistemic certainty is the best candidate for tethering because such certainty is the most reliable, the simplest, and the only non-arbitrary candidate. If the tether is fallible or lucky, it is possible that the belief wanders away.

There are further reasons for accepting (3). First, suppose that one is an epistemic invariantist, thus holding that the standard for something to count as an item of propositional knowledge does not change according to epistemic context. EI provides a plausible account for the cross-context uniformity of the invariant standard: in every case of knowledge, epistemic certainty is required. Since many epistemologists are invariantists, EI might be an appealing position in epistemology with respect to the problem of explaining why the knowledge standard is invariant.

Second, EI explains why so-called concessive knowledge attributions (e.g., "I know that p but p could be false") seem both awkward and inconsistent. If knowledge requires epistemic certainty, then such attributions make no sense. As

David Lewis (1996, 549) put it, "If you claim that S knows that P, and yet you grant that S cannot eliminate a certain possibility in which not-P, it certainly seems as if you have granted that S does not after all know that P. To speak of fallible knowledge, of knowledge despite unelimitated possibilities of error, just sounds contradictory… knowledge must be by definition infallible." And as Peter Unger (2002, 98) wrote: "The very particular idea that knowing *entails* its being all right to be certain is suggested, further, by the fact that knowing entails, at least, that one *is* certain…that this is a fact is made quite plain by the inconsistency expressed by sentences like 'He really *knew* that it was raining, but he *wasn't* absolutely *certain* that it was.' Such a sentence can express no truth: if he wasn't certain, then he didn't know."

Third, as Moti Mizrahi (2019) contends, the factivity of knowledge entails EI. As he puts it, to say that knowledge is factive is to say that if S knows that *p*, then *p* is true; that is, 'knowledge' is a term of success. The factivity of knowledge is a widely held position among contemporary epistemologists. Mizrahi argues by hypothetical syllogism from the factivity of knowledge to EI: (i) if S knows that *p* on the grounds that evidence *e*, then *p* cannot be false given *e*; (ii) if *p* cannot be false given *e*, then *e* makes *p* epistemically certain; therefore, (iii), if S knows that *p* on the grounds that *e*, then *e* makes *p* epistemically certain. The conclusion in (iii) is consistent with Butchvarov (1970, 50), who writes that one possesses knowledge "Clearly, only in the sense that if one is to know that *p*, then one's evidence that *p* must be such that it is *absolutely impossible* that *p* is false, the sense in which one's evidence that *p* makes a mistake about *p* absolutely impossible, the sense in which one's evidence that *p*, entails that *p* is true."

For (4), as Stephen Hetherington (2021, Section 1) notes, almost all contemporary epistemologists are fallibilistic in the descriptive sense that very few kinds of human belief are sufficiently justified such that it is impossible for that belief to be false given the pertinent evidence. We might call this *descriptive fallibilism*.[3] Descriptive fallibilism can be taken in a restricted sense such that for some area(s) of epistemic endeavor (e.g., meteorology, epidemiology, insurance risk assessment), no human belief in that area is infallible. Limb (4) holds that a restricted sense of descriptive fallibilism is true concerning S.

Consider additional reasons for accepting (4). First, sometimes our senses mislead us. Second, occasionally our memories are faulty. Third, in various ways,

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[3] Descriptive fallibilism is about justification, not about modality. In other words, the fallibilist does not claim merely that human beliefs about contingently true propositions are such that they could have been false, although the fallibilist might reasonably assert that modal position. Rather, the fallibilist claims that many or most human beliefs rest on epistemically fallible justification.

human beings are inclined to mistakes in deductive and inductive reasoning.[4] Fourth, if Hume is right, empirical induction is inconclusive because it presupposes that the observable world is uniform and thus that future observations will be relevantly similar to past ones. Fifth, if Descartes is right, nearly every kind of human belief is such that it is possibly false, since it might have been the result of deception or some otherwise fallible process of belief formation. Sixth, sometimes, human beings err in evaluating the relevance and/or the strength of what they take to be evidence for their beliefs. Seventh, human beings are inclined to distraction by emotions, desires, and cognitive biases in ways that can generate epistemic error. In many respects, the limitations of our cognitive faculties prevent us from obtaining epistemic certainty. As Hetherington (2021, Section 5) writes, the scope of possible sources of descriptive fallibility is "disturbingly expansive" and "could be indefinite."

3. A Challenge to IT₁

Consider the following argument, based on the aporetic tetrad above. Let us call it the "No Educated Person Argument" (NEPA). On NEPA, epistemic infallibilism combined with reasonable propositions entails that academic education is impossible outside pure mathematics, logic, moral insight, and self-knowledge.

A. If one possesses an academic education in S, then one possesses propositional knowledge about S.

B. If one possesses propositional knowledge about S, then one possesses infallibility about S.

C. Thus, if one possesses an academic education in S, then one possesses infallibility about S.

D. No human person possesses infallibility about S.

E. Thus, no human person possesses an academic education in S.

I suspect that, for some, (E) is unacceptable. One might insist that at least one human person is educated in S. Yet as I have argued, (A), (B), and (D) are plausible. How might the infallibilist avoid commitment to (E) while accepting (A), (B), and (D)?

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[4] The existence of various deductive and inductive fallacies is evidence of the frequency of human mistakes in deductive and inductive reasoning. The Wason Selection Task study by psychologist Peter Wason provides additional evidence that human beings are inclined to err in deductive reasoning. The Linda Problem (i.e., the conjunction fallacy), based on the work of psychologists Amos Tversky and Daniel Kahneman, is evidence that humans are inclined to mistakes in probabilistic reasoning.

4. A Distinction Concerning Propositional Knowledge?

To address the question at the end of the previous section, consider what some epistemologists call "loose talk" about knowledge. We use such loose talk when useful for practical purposes. Here is an analogy: 'straight' is an absolute term, yet for practical purposes we refer to "straight lines" which are not precisely straight; similarly, 'knowledge' is an absolute term which refers to epistemic certainty, but for practical reasons we use knowledge attributions such "Jones knows that the grocery store is open now" even though Jones lacks epistemic certainty about that claim.[5]

With this conception of loose talk in mind, consider a distinction between loose propositional knowledge (LPK) and strict propositional knowledge (SPK). One has LPK if one possesses an item of JTB *sans* epistemic certainty. SPK is JTB plus epistemic certainty. Given this distinction, to possess propositional knowledge, one must have either LPK or SPK. I will call this Infallibility Thesis[2] (IT[2]).

Suppose *arguendo* that the LPK/SPK distinction is a real distinction. This move enables one to explain ordinary propositions which we take ourselves to know and which, nevertheless, are fallible such as "I know that I read the book last week" or "I know that Julius Caesar crossed the Rubicon in 49 B. C." Yet the distinction also enables one to hold a strict view of propositional knowledge that requires epistemic certainty. And when we have epistemic certainty, we *know for sure*. For example, no one goes door-to-door in Fresno, California inspecting homes and businesses to gather information for an inductive argument supporting the claim that there are no square circles in Fresno. That there are no square circles in Fresno is an item of epistemic certainty. Hence, we recognize that there is no need to continue inquiring into the matter. However, one might claim for practical purposes to know that there are electrons or that Alexander fought at the Battle of Gaugamela in 331 B. C. and yet have reason to continue investigating the topic.

Moreover, the LPK/SPK distinction accounts for the fact that we are epistemically uncertain about much of what we practically take ourselves fallibly to know; indeed, epistemic uncertainty is a fundamental aspect of human life. Such uncertainty is a challenge across many important areas of human endeavor, including the sciences, philosophy, historiography, religion, and political thought. With this distinction in mind, we can revise the aporetic tetrad as follows:

1. There is some human person who possesses an academic education in S.

2*. The possession of an academic education in S entails the possession of either

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[5] This way of thinking about loose knowledge attributions goes back at least to Peter Unger (1971) and (1975).

LPK about S or SPK about S.

3*. The possession of SPK about S entails infallibility about S.

4. No human person possesses infallibility about S.

This revision eliminates the *aporia*, making it acceptable to affirm each limb of the tetrad. On the basis of this revision, we can construe the NEPA as follows:

A*. If one possesses an academic education in S, then one possesses either LPK about S or SPK about S.

B*. If one possesses SPK about S, then one possesses infallibility about S.

C. Thus, if one possesses an academic education in S, then one possesses infallibility about S.

D. No human person possesses infallibility about S.

E. Thus, no human person possesses an academic education in S.

Call this argument NEPA2. Here, (C) does not follow from (A*) and (B*), and thus (E) does not follow. Given the distinction between LPK and SPK, NEPA2 is a non-sequitur.

By introducing the LPK/SPK distinction, it seems one can accept IT2 and hold that there is some human person who possesses an academic education in S. Such a person would possess LPK about S. In sum, IT2 does not entail skepticism about the efficacy of education. By extension, IT2 does not entail that we lack loose, practical knowledge of many things in ordinary life that are nevertheless based on fallible justification. Rather, IT2 holds that we lack epistemic certainty regarding our items of loose knowledge. According to this reply, the epistemic infallibilist can avoid commitment to (E).

5. Objections So Far

Objection 1: The distinction between LPK and SPK is illegitimate. These are not two kinds of propositional knowledge. Rather, they are in different epistemic categories.

To start, this objection can be addressed by reiterating that LPK/SPK is a real distinction. There is a genuine difference between infallible knowledge and fallible yet reasonable true belief. We sometimes use 'know' to refer to epistemic certainty and sometimes to mean a justified belief that is true but might be mistaken. The LPK/SPK distinction does justice to these different uses of the term 'knowledge.'

Moreover, the distinction likely is acceptable to epistemic fallibilists, since they already accept the difference between fallible propositional knowledge and propositional knowledge which is epistemically certain. And the distinction might be acceptable to infallibilists who are open to recognizing that a JTB *sans* epistemic

certainty can possess a relatively high degree of epistemic quality and thus count in practical affairs as a case of knowledge, loosely speaking. If not vulnerable to a Gettier challenge, such cases possess an epistemic pedigree which seems sufficient to count as ordinary knowledge in the loose sense of the term.[6]

Objection 2: Infallibilism entails an unwarranted skepticism that does not justly recognize our common views of propositional knowledge. We know many things despite the fact that such items of knowledge are fallible.

Again, this objection can be answered. The LPK/SPK distinction allows for loose knowledge attributions, which affirms ordinary language about knowledge with respect to cases of fallibleness; yet the distinction permits a stricter sense of propositional knowledge which accounts for common language about certainty. On this view, IT_2 does not entail unwarranted skepticism. Even if infallibilism entails skepticism about much of what we take ourselves to know, the explanatory benefits of EI outweigh the epistemic costs of any skepticism associated with it.[7] If it turns out that we do not know much of what we take ourselves to know, *sic vita est*.

With respect to supposed cases of fallible propositional knowledge, the strong infallibilist can deny that such cases are in fact items of propositional knowledge, even if the term "knowledge" is used to discuss them. The strong infallibilist can say that normatively or prescriptively appropriate uses of "knowledge" are reserved for epistemic certainty, even if it is a descriptive fact that people loosely use "knowledge" to refer to cases of reasonable belief which fall short of epistemic certainty. Ordinary language use is not enough to prove that cases of fallible justification count as knowledge, because it is common for human beings to use language incorrectly or loosely for the sake of conversational convenience.[8]

Objection 3: According to Agrippa's Trilemma, it is not possible to believe any proposition *p* on the basis of adequate justification. Such justification requires some other proposition *q* to provide evidential support. But for any *q*, either (i) *q* needs support from another proposition *r*, which generates a vicious infinite regress; or (ii) *q* is supported in virtue of a vicious circularity (i.e., either *q* supports itself in a circular manner, or *p* supports *q* in a circular manner); or (iii) *q* is accepted in an arbitrary manner. Each lemma is rationally unacceptable. The version of EI addressed in this paper holds that at least some propositions are adequately justified: propositions in mathematics and logic, moral propositions (assuming moral

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[6] I will press this objection further in the section "A Final Objection."

[7] See Climenhaga (2021).

[8] This point signifies a deeper problem with IT_2, which I will address in the section entitled "A Final Objection."

intuitionism), and propositions concerning self-knowledge. Agrippa's trilemma shows that even these propositions are not justified.

In response to this objection, it should be noted that the trilemma presupposes that any justified proposition must be justified by some other justified proposition. A foundationalist can deny this assumption by holding that some propositions are self-evident and thus properly basic. The advocate of IT$_2$ who accepts foundationalism can claim that, at least with respect to SPK, knowledge is possible in some cases. Such cases involve propositions known with epistemic certainty; these propositions are self-evident either in the sense of being *a priori* truths knowable by rational insight or being properly basic beliefs concerning self-knowledge.

Objection 4: EI undercuts itself, since one cannot claim to know EI with certainty. This undercutting factor weakens the infallibilist's claim.

My response to this objection is that it is not a serious problem for the infallibilist, since the infallibilist need not claim certainty about EI, but may claim to possess a reasonable belief about EI.

6. Extending the Distinction

The infallibilist is positioned to hold that IT$_2$ provides explanatory benefits in virtue of extending the use of the LPK/SPK distinction to other areas of human life in which we take ourselves practically to know. For example, in the sciences, history, government and political thought, and ordinary instances in which we rely on our senses or our memories, we take ourselves to know that which rests on fallible justification. For instance, as I write this sentence, there is a blue vase sitting on the table in front of me. And I remember having toast and coffee for breakfast this morning. Despite the fallible nature of these beliefs, it is common to consider them practically as examples of knowledge in the loose sense.

To elaborate, take a case from political thought: intelligence analysis. Intelligence analysts are responsible for collecting, evaluating, and disseminating intelligence information that meets standards of accuracy and justification. Ideally, items of intelligence value are items of propositional knowledge. Such analysts are responsible for distinguishing between claims of knowledge and claims which fall short of knowledge. For instance, an intelligence analyst might be tasked with evaluating information regarding political and economic stability in Latin America and transforming that information into practical knowledge that can help an American diplomat responsible for the development of U. S. foreign policy concerning that part of the world. But according to the intelligence analyst John S. Mohr (2017) "Uncertainty is among the few certainties in the intelligence field ..."

Plausibly, Mohr is referring to epistemic certainty and not merely subjective certainty.

Mohr's claim presents a paradox: the field of intelligence analysis aims at propositional knowledge yet is marked by epistemic uncertainty. This is no mere intellectual paradox or ivory-tower problem: it has practical weight with respect to matters of government, national security, and diplomacy. But suppose that the distinction between LPK and SPK resolves the paradox. In this case, intelligence professionals can responsibly claim to possess LPK even if their epistemic uncertainty prevents them from claiming SPK. An extension of the distinction into other important areas of practical human affairs enables an infallibilist to block the general objection that EI fails to do justice to ordinary epistemic life in areas such as legal analysis, jury deliberation, practical planning and decision-making, insurance underwriting, etc.

The distinction between LPK and SPK is relevant to other problems in epistemology, such as the problem of the criterion. According to this problem, every claimed item of *knowledge that p* is vulnerable to questions such as: "On what basis can you determine that this claimed item of *knowledge that p* is in fact an item of such knowledge? What criterion do you use to determine between knowledge and non-knowledge with respect to this case? And how do you know that your claimed item meets your criterion?" If one claims to possess such a criterion C, the following questions can be asked: "How do you know that C? And how do you know that your *knowledge that p* meets the standard of C?" If the answer involves an appeal to some other criterion C*, then a vicious infinite regress is generated. A skeptic can thus claim that there is no propositional knowledge.

There is a way out of this regress. If *p* is evident, one might claim *knowledge that p* and yet not claim any criterion for recognizing such knowledge. For example, the LPK/SPK distinction enables a foundationalist to hold that SPK does not require some independent criterion which itself requires another criterion of justification, *ad infinitum*. Regarding SPK, some propositions of mathematics, logic, morality, and self-knowledge are knowable immediately and infallibly. Nevertheless, LPK remains open to the problem of the criterion. Here, one can take a particularist approach to items of LPK: it is permissible to claim loose knowledge about many things without needing a criterion. Then one can use one's items of clear LPK and SPK to develop a pertinent criterion.[9]

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[9] See Chisholm (1989, 6-7) for a discussion of particularism.

7. A Final Objection

The LPK/SPK distinction, if feasible, seems to enable the epistemic infallibilist to avoid the *aporia* by denying (3) in the tetrad. Given the distinction, it is not the case that the possession knowledge about S entails infallibility about S. One can have LPK about S. Moreover, the distinction enables the epistemic infallibilist to deal with other important problems in epistemology.

Yet there is an objection which has not been adequately pressed: the distinction is not feasible. It ignores the very standard of epistemic infallibilism. Hence, a strict epistemic infallibilist might view the distinction as an attempt to have it both ways, to be at once a fallibilist and an infallibilist. This will not work, since only epistemic certainty does the trick of reliable justification. For instance, the epistemic infallibilist can claim that there is no non-arbitrary way to determine how much justification is needed for an item of LPK. Moreover, the arguments against EF in Section 2 seem to count as arguments against LPK. Hence, according to the commitments of EI, so-called LPK is not genuine knowledge. 'Loose' in "loose knowledge" functions as an *alienans* adjective. Only SPK counts as knowledge. Thus, a legitimate EI cannot appeal to LPK as a form of knowledge, since EI holds that knowledge *requires* epistemic certainty. As such, the LPK/SPK move fails. Given these challenges, what are some alternatives for an epistemic infallibilist to respond to the tetrad?

I doubt that many contemporary epistemologists would deny (4) of the tetrad. Hence I will not explore that option here. We are left with either the denial of (1) or of (2). The epistemic infallibilist could reject the LPK/SPK distinction, hold to IT1, and deny (1). On this option, no human person is academically educated in S. Those who successfully undergo academic courses in S are not educated in S. Rather, they obtain rationally informed, epistemically probable positions concerning S which nevertheless fall short of academic education. According to this view, academic education entails propositional knowledge, which entails epistemic certainty. Therefore, although academic education is possible in areas such as mathematics and logic, such education is impossible for humans in S. Here, we must content ourselves with some degree of epistemically probable belief which lacks certainty and hence is fallible. Let us call this Option A. This option challenges a common assumption that education is possible in areas such as the sciences and the humanities.

By way of initial evaluation, I suspect that those who have undergone rigorous academic study in, say, history or biology might find unsavory the claim that they are not educated in their respective disciplines. In addition, colleges and universities claiming to offer such education might find the claim unacceptable, except perhaps for any infallibilists working in their philosophy departments. Nevertheless, the

infallibilist could bite the bullet here and insist that the cumulative evidence for EI outweighs the *prima facie* implausibility of skepticism regarding education outside of mathematics and logic.

An infallibilist could also reject the LPK/SPK distinction, affirm IT$_1$, and deny (2). On this option, it is not the case that the possession of an academic education in S entails the possession of propositional knowledge about S. One who successfully completes a course of academic study in S can be academically educated in S and yet not possess knowledge about S. Such education presumably would involve acquiring justified, true beliefs about S which are sufficient to qualify as educated beliefs but do not count as knowledge. On this view, academic education might also involve the cultivation of the intellect, the fostering of human flourishing, the acquiring of a mature capacity for judgment, know-how, and other goals which have also been considered important aims of education. Let us call this Option B.[10] This option challenges the traditional view that education provides knowledge.

Again, I suspect that those who have undergone appropriate academic study in S-disciplines might not like the claim that they lack knowledge in their respective disciplines. But here too, the infallibilist could stand firm and insist that the evidence for EI outweighs the *prima facie* implausibility that propositional knowledge in S is impossible. Moreover, as Mizrahi (2019) notes, the fact that a claim is difficult for some people to accept is not effective evidence against that claim.

I noted earlier in this section that we are left with either the denial of (1) or the denial of (2). This is not exactly correct. The infallibilist could take a mysterian position and deny that the tetrad is collectively inconsistent. Each limb is true, yet we cannot grasp how they are collectively consistent. Or one could accept that the limbs of the tetrad are inconsistent and yet affirm each limb, appealing to some version of dialetheism. For the sake of space, I will not pursue these options here except to make two points: first, although mysterianism is a reasonable position in some cases, generally it should be taken as a last resort – after all options have been exhausted – and that it should not be used as an *ad hoc* move; second, as Rescher (2009, 3-4) notes, since a primary goal of rationality is to maintain logical consistency, the resignation to accept inconsistency is hardly a rational posture.

8. The Implications of Options A and B

Suppose an infallibilist takes Option A. On this option, no person is academically educated in any S-subject, since no one has propositional knowledge in S. Hence,

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[10] Option B would indicate the difficult claim that education in the sciences does not provide knowledge, and perhaps even that scientific knowledge is unobtainable for us.

pace the traditional view, the basic epistemic aim of academic education is not the acquisition of propositional knowledge. It is unreasonable to hold that an important human endeavor such as education imposes on us goals which are unreachable by us. Therefore, if there are aims of academic education, they cannot include propositional knowledge, at least not in S-subjects. Instead, the goals of academic education might include epistemic goods such as reasonable belief, the sharpening of intelligence and the faculties of critical inquiry, the improved ability to engage in something like the Socratic Method, cultivated abilities for discernment, intellectual character development, the acquisition of epistemic virtues, and the general increase in human flourishing with respect to the life of the mind.

Suppose instead that the infallibilist opts for B. Here, one can obtain an academic education in S without acquiring propositional knowledge about S. On this view, the nature of education does not involve the acquisition of propositional knowledge. Again, perhaps education involves such Socratic values as the cultivation of the intellect and the character, the improvement of the human ability to reason, the advancement the human capacity to flourish, or the acquisition of important know-how and experiences. However, propositional knowledge is not a necessary condition for education. This option poses a problem to the traditional assumption that knowledge is essential for education.

Jason Baehr (2016, 8) asks: "How does the goal of intellectual character growth stand relative to other educational goals such as critical thinking, knowledge-acquisition, and civic responsibility?" Note that this question presupposes that the acquisition of knowledge is a goal of education. This presupposition is consistent with the traditional assumption addressed in this paper. Yet I have argued that the acquisition of knowledge is not a goal of education because such acquisition is not feasible in S-subjects. Nevertheless, it is coherent to hold that intellectual character development is a goal of education. Indeed, Baehr (2016, 4) notes that the overlap between virtue epistemology and education is a lacuna in the current philosophical literature.[11] This paper addresses the gap by providing reasons to conclude that knowledge-acquisition is not an achievable goal of education but that intellectual character development is an important goal.

Suppose we characterize *rational human agency* roughly as the capacity to choose and act on the basis of relevant reasons in typical circumstances that require rationality. Options A and B each have interesting implications for rational human agency. This paper has briefly addressed issues in government and political thought,

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[11] Baehr's book is a rich source of information on epistemic virtues that are achievable in education, such as proper open-mindedness, inquisitiveness, intellectual humility, proper skepticism, and intellectual perseverance.

legal analysis, practical planning and decision-making, insurance underwriting, various encroachment issues, practical cases of 'knowledge,' and assumptions that one has knowledge. If we lack education and/or knowledge in areas outside of mathematics, logic, and moral insight, then this lack would influence our agency in the areas noted above. Moreover, such lack of knowledge or education would influence pedagogical goals and methods with respect to how knowledge is imparted and acquired in the classroom. However, the educative emphasis on intellectual character growth would be beneficial for human agency insofar as the former cultivates the human capacity for reason, which is crucial for the success of the latter.

In sum, the infallibilist can wield a strong support for EI. Section 2 presents at least 14 plausible reasons in favor of EI, making a substantial cumulative case for this view. It therefore seems that the traditional assumption about education is difficult to accept, despite the challenging implications of rejecting the traditional assumption.

9. Conclusion

In this paper, by posing an aporetic tetrad, I investigated EI, prompting the development of a cumulative case argument for EI which makes the traditional view of education improbable. Given the case for EI in this paper, it appears that either education does not provide knowledge in many important academic subjects, or that we cannot obtain education in these subjects. We have consequently uncovered questions for further investigation: how might philosophers and other theorists who affirm the traditional assumption respond? Since there are good reasons to accept EI, should those amenable to the traditional view modify their positions about the nature and epistemic aims of education? Should they maintain those positions and instead attempt to refute the case for EI? Does EI also threaten the view that we have scientific knowledge, since the typical propositions of science are not knowable with epistemic certainty?

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