

Unifying the intellectual virtues

(formerly known as “Virtues, truth-conduciveness, and robustness”)

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ABSTRACT. The intellectual virtues include two seemingly quite different types of traits: reliable faculties on the one hand and inquiry-regulating traits of intellectual character like conscientiousness and openmindedness on the other. Extant virtue theories do not appear to have provided a single account that adequately covers both types of virtue. In this paper, I examine the different ways in which a trait or disposition can contribute to our cognitive goal of acquiring significant true beliefs. I propose that the two types of virtues can be understood as contributing in different ways to our cognitive goal, and develop a general framework for understanding their value.

The intellectual virtues include two seemingly quite different types of traits: reliable faculties on the one hand and inquiry-regulating traits of intellectual character like conscientiousness and openmindedness on the other. This distinction corresponds to some extent to the distinction between virtue reliabilism and virtue responsibilism; the former approach takes reliable faculties as paradigmatic of the virtues, while the latter start its investigation with inquiry-regulating character traits. Neither approach seems to have managed to establish that their account adequately covers both types of virtues.

In this paper, I examine the different ways in which a trait or disposition can contribute to our cognitive goal of acquiring significant true beliefs. The former sort of virtue contributes mainly by being reliable. The latter sort can also contribute to power (the range of true beliefs we can form), portability (the range of environments in which we can form true beliefs), or significance (the importance of the beliefs we acquire). Because of this, it seems we can give a unified treatment of both levels of virtue as traits that contribute to our cognitive goal. This conception of virtues helps us understand how attributions of

intellectual virtue can diverge from actual success, and opens up new avenues of research on the intellectual virtues.

1. Two levels of intellectual virtue

Hookway (2003) observes that two types of dispositions can be called intellectual virtues. The first are reliable, knowledge-generating faculties; these include general faculties like perception, memory, and deduction, as well as subject-specific capacities like the ability to identify birds accurately or understand a language. For sake of easy reference, call these “low-level” virtues.

The second category are traits of cognitive character that regulate inquiry and deliberation, such as conscientiousness, perseverance, openmindedness, and so forth. This category also includes intellectual analogues of moral virtues like humility and courage, and other skills for solving problems that can arise for human reasoning, such as Morton’s (2004) H and C virtues.¹ Call these “high-level” virtues.

Hookway notes that virtue reliabilists like Greco and Sosa² take low-level virtues as paradigmatic; virtues, for them, are reliable belief-forming dispositions or abilities. Virtue reliabilists chiefly invoke the virtues as part of the analysis of knowledge. In contrast, responsibilists like Zagzebski, Baehr, and Montmarquet³ take the high-level virtues as their starting points.⁴ For these thinkers, intellectual virtues are analogous to Aristotelian moral virtues, being robust and involving characteristic motivations⁵ rather than just being reliable abilities.

¹ When B_1, \dots, B_n entail an implausible q , H-virtues (for Harman) help us to determine whether to accept q or reject one of B_1, \dots, B_n . C-virtues (for Cherniak) allow us to trace through the “branching maze of consequences” (Morton 2004: 484) of a set of propositions to discover interesting and important implications or presuppositions. C-virtues will be discussed further in §7.

² See, e.g., Greco 2000a, Sosa 1991, 2007.

³ See, e.g., Zagzebski 1996, Montmarquet 2000, Baehr 2007.

⁴ See Baehr 2006b for a more detailed discussion of the different conceptions of the virtues on reliabilist and responsibilist approaches.

⁵ Axtell 2008, however, distinguishes between “phronomic” responsibilism like Zagzebski’s, on which whether one is motivated to believe the truth is central to whether one believes responsibly, and “zetetic” responsibilism, on which responsibility is determined diachronically by the agent’s

It is unclear whether either account can be extended to include the other type of virtue. I won't attempt to make a solid case for this conclusion here; my main concern in this paper is to propose a way of unifying both levels of virtue, rather than to argue the negative point that no other proposal can work. So I hope that a few brief comments will suffice. Various responsibilist arguments against virtue reliabilism seem to express the concern that the reliabilist approach can't capture intuitive differences in the quality of agents that don't amount to differences in reliability, or can't make sense of a sort of responsibility characteristic of the exercise of the high-level virtues.⁶ Baehr (2006b) surveys some differences between high-level and low-level virtues, and concludes that without significant augmentation virtue reliabilism cannot give a satisfactory treatment of high-level virtues. In the other direction, it is often argued that responsibilist theories of knowledge don't work (see, e.g., Baehr 2006a). These arguments can be readily converted into arguments that responsibilist characterizations of virtue mischaracterize knowledge-generating faculties, i.e., low-level virtues.

2. Differences between the levels

Moreover, there are some typical differences between low-level and high-level virtues that suggest, at the very least, that an account designed specifically for one level will have grave difficulties accounting for the other. These differences will inform my discussion below. Note that these differences are typical but not categorical; there are exceptions, but they are rare enough that we may draw conclusions about general features of the two levels of virtue despite them.

First, low-level virtues are all belief-forming capacities, while high-level

responsiveness to evidential requirements over the course of inquiry. The latter approach is favoured by Hookway and, of course, Axtell himself.

⁶ See, e.g., Zagzebski's Christopher and Dennis case (1996: 26-8), or Montmarquet's argument that high-level virtues are more under our control than low-level ones (2000: 135-6). My proposal here is neutral on the question of whether we are characteristically more responsible for, or more in control of, high-level virtues than low-level ones. That is a topic for another occasion.

virtues can sometimes be manifested in—or even by—the absence of belief. Consider someone defending a hypothesis against hasty rejection from others, suggesting a novel possibility for a solution to a problem, or listening to a student’s challenge. These activities can manifest courage, originality, and humility respectively, but may not involve the formation of any beliefs. In fact, forming beliefs about the oft-rejected hypothesis, or the novel possibility, or the student’s challenge might manifest vices of excess. It is *prima facie* odd to say, however, that one manifests virtuous vision or deduction except when these capacities have generated a belief.

Low-level and high-level virtues are in fact virtues in different senses of the Greek root *arete*. Low-level virtues are virtues in the sense of “excellence”, which Sosa (1991: 271) and Greco (2000b) maintain is used by Plato and Aquinas to describe powers and faculties. Zagzebski, following the usage in Aristotle and in virtue ethics, argues that “the Greeks identified virtues, not with the faculties themselves, but with the excellences of faculties” (1996: 10).

Second, there is a much stronger presumption of truth for beliefs described as being formed in a low-level virtuous way than a high-level one. Appeals to the low-level virtues provide stronger support for claims of knowledge than appeals to the high-level virtues. Compare, for instance, saying “S knows that p because she saw that p” or “remembers that p”, with “S knows that p because she is open-minded” or “because she is courageous”. The former provide better reasons for attributing knowledge to S than the latter. In keeping with this, many low-level virtues have associated factive verbs like “sees”, “remembers”, “deduces”, and the like.⁷ To my knowledge, no high-level virtue has a corresponding factive verb.

Finally, low-level virtues are supposed to play a crucial role in the analysis of knowledge: on both Greco and Sosa’s accounts, knowing that p entails that the

⁷ Hazlett (forthcoming) has argued that these verbs are not actually factive, on the grounds that we cannot otherwise adequately explain locutions like “It was then that I saw I was going to die”. On Hazlett’s preferred view, the seemingly factive verbs do entail that the subject has epistemic warrant for her belief; this makes it likely, but does not guarantee, that the belief is true. Either way, such verbs carry a very strong presumption of truth, much stronger than the adjectives and adverbs with which we attribute high-level virtues and their functioning.

belief that p was generated by an intellectual virtue. Thus low-level virtues should have the features of knowledge-generating faculties more generally. One of these features is that processes that lead to knowledge can be localized or narrow in scope. Presumably, all of us who have taught introductory symbolic logic have observed that there are students who simply cannot do *modus ponens* in symbolic contexts. I cannot understand how a person can survive to adulthood, much less be admitted to university, unless they can do informal reasoning involving *modus ponens* at least most of the time. But in these students, it seems that their capacity to do *modus ponens* is specific to informal reasoning, and does not extend to formal contexts.

A number of studies have found that our cognitive capacities are sensitive to environment and to how problems are presented. One (reported in Ceci 1993) looked at Brazilian construction workers with little formal education. It was found that these workers can very accurately solve geometrical problems when presented as problems that would arise when doing construction—for instance, given such-and-such floor area and depth of foundation and a fill consisting of such-and-such proportions of concrete and gravel, how much gravel is needed? They were unable to solve the same problems, however, when they were presented as problems that would arise when working in a juice factory or in abstract form. It seems clear that these workers know the answers to the problems when they are presented in terms of construction, even though they lack general capacities for mathematical reasoning.

High-level virtues, in contrast, are characteristically robust—they apply to a wide range of problems or inquiries, in a wide range of different situations or environments. A canonically open-minded or humble inquirer is open-minded or humble all, or at least the great majority, of the time.

Baehr (2006b) makes a similar observation; he notes that the reliability of low-level virtues is tied to particular environments and particular subject-matters, but the effectiveness of the high-level virtues is not. Thus, he concludes, we

cannot analyze the truth-conduciveness of the two levels in the same way.⁸

One moral to draw from these three differences is that it appears that low-level virtues are central to the appraisal of beliefs as knowledge, while high-level virtues are centrally involved in the appraisal of agents and their inquiries. Low-level virtues appear to be closely tied to the possession of knowledge and true belief, while high-level virtues appear to describe stable features of good inquiry or creditworthy believing. This observation will play an important role in the account I develop below.

3. The goal of cognition

My aim in this paper is to outline a generally instrumentalist account of intellectual virtue that captures both levels; both high-level and low-level virtues are valuable because they contribute to the attainment of our cognitive goals. The difference between them is that they make characteristically different sorts of contribution, as I will explain below. My account of low-level virtues will more or less fit into the general category of agent reliabilism (developed in Greco 2000a); thus the main task here is accounting for the high-level virtues.

Theories of the high-level virtues are typically noninstrumentalist, in that the virtues are aimed at or related to our cognitive goals, but their value does not just derive from their contribution to the attainment of those goals. For instance, Zagzebski (1996) argues that the virtues involve a motivation to attain true belief (although she also requires reliable success for virtue). Wright (2009), drawing on Stoic virtue ethics, has proposed that the virtues need not even reliably succeed

⁸ Baehr maintains that a further difference between low- and high-level virtues (which he calls “character” and “faculty” virtues, respectively) is that the former are neatly divisible into faculties, while the latter are often only valuable when conjoined with other virtues; a properly valuable open-mindedness, for instance, plausibly requires an attentiveness to the quality of evidence provided by different testifiers, while a properly valuable courage or tenacity requires the capacity to recognize when it is finally time to revise one’s beliefs (2006b: 210-11).

This may be something of a red herring, because in belief-formation the low-level virtues are sometimes just as interrelated. Suppose I see someone on the street, recall a picture of Vicente Fox I once saw in a magazine, and recognize that the person I see is in fact Vicente Fox. The faculties of vision and memory contribute equally to the formation of this belief, and both need to be virtuous in order for me to know that the man on the street is Vicente Fox.

at leading us to believe truly; they only have to succeed at reaching the *telos* of being epistemically rational.

Given the difficulties I briefly mentioned above with providing responsibilist accounts of knowledge, it seems unlikely that an account of knowledge-generating faculties on noninstrumentalist lines will succeed. Having knowledge requires reliable success, and (it seems) leaves little room for other virtue-making factors like motivations or *teloi*. Thus it seems unlikely that both levels of virtue can be unified on a noninstrumentalist account. However, I won't argue for this point here; the best way to settle the issue is to attempt unification from different conceptions of virtue and see which approach works best.

Our cognitive goal, it seems, can be generally characterized as “significant true belief”, to use Kitcher's (1992) pithy formulation. We want our beliefs to be true, but we don't just want any true beliefs. We want true beliefs on interesting or important matters, that have practical value for us, that explain or help us understand the world. Alston writes that he cannot prove that significant truth is the basic aim of cognition because he does not know of “anything that is more obvious from which it could be derived” (2005: 30). I won't try to do any better than that.

Truth is, as Davidson put it, “beautifully clear”, but I should say a bit about significance. There are a number of different ways in which a belief can be significant.⁹ One obvious way is for it to have practical utility; having that true

⁹ One might also want to speak of a belief's being significant because the doxastic state has features or accompaniments that are of particular importance to particular cognitive activities. For instance, having a belief supported by consciously accessible evidence is more valuable than believing without evidence, since when reasoning consciously we can be more confident of beliefs for which we can recall evidence. Similarly, a belief might be more significant or more valuable by virtue of being quick to access. When driving one needs not only *true* beliefs about the locations of other vehicles; one needs those true beliefs to be accessible quickly enough to guide one's actions. For purposes of avoiding collisions, however, having access to the evidence for those beliefs is irrelevant.

Properly speaking, we may want to distinguish between *propositional* significance, or the significance of knowing that proposition, and *doxastic* significance, or the significance of features of the way in which that proposition is represented or stored. My discussion here considers only the former sort of significance, although the latter may have interesting implications for virtue theory.

We might wonder if it is the case that our cognitive goal is only satisfied by beliefs satisfying certain minimum conditions on doxastic significance. For instance, one might suppose that our cognitive goal is to have significant true beliefs that are supported by accessible evidence.

belief may contribute to attaining our non-epistemic goals. Sometimes, it seems, beliefs can be significant just because they satisfy our natural curiosity, which may not be tied in any direct way to practical matters (see Grimm 2008). A belief can also be significant because it contributes to an especially valuable sort of epistemic state, such as wisdom, understanding, or coherence. I won't try to analyze these states here, but it would certainly seem that beliefs that contribute to them will be of distinctive importance.

Exactly what beliefs are significant to a given agent is highly variable. It depends on one's desires and interests, capacities for cognition and action, prior beliefs, and the like. It is moreover highly unpredictable, particularly since it varies over time just as it does between agents. Truth-value, however, is the same for everyone. So some sorts of epistemic evaluations, especially knowledge, consider only the truth-conduciveness or truth of a belief.¹⁰ You can know how many grains of sand are in a certain square metre of the Sahara, or all the numbers in the Fairmont, West Virginia, phone book that end with '8'. To attribute knowledge that *p* to someone is (very approximately) to say that that person is a reliable, trustworthy source of information regarding whether *p*, *if* anyone cares to believe correctly on that subject. Similarly, we seem in general to filter information for reliability more assiduously than we filter for significance. If someone reads to me an item from *People* about the starlet of the week's latest misdeeds, I may very well hear and remember it, although I (for one) would prefer not to have beliefs about such things.¹¹

Nonetheless, even though not all epistemic evaluations make use of both axes of truth and significance, it is plausible that when we evaluate agents and their inquiries, we do consider the importance or value of the true beliefs they acquire. Much of the appeal of virtue epistemology for its adherents is the

(This was suggested to me by Trent Dougherty; I suspect it may be a basic tenet of evidentialism.) The diversity of uses to which we put our beliefs makes such requirements *prima facie* questionable, as the diverging demands of conscious deliberation and avoiding collisions on the highway should illustrate. I thus imagine we are better off adopting an approach like that of Alston 2005, on which evidential support (or quick access) makes a belief-state more epistemically valuable, but isn't a necessary condition for that state's having epistemic value.

¹⁰ Cp. Grimm (forthcoming).

¹¹ At least I hope I filter for reliability better than I do for significance.

possibility of capturing a wider range of epistemic evaluations than just justification and knowledge, the two conventional preoccupations of epistemology.¹² Many of these broader evaluations can be expected to invoke significance, and particularly those concerning agents' characters and inquiries. Similarly, given present concerns we can set aside the question of whether there are beliefs whose significance is purely epistemic. Virtue theorists often argue that epistemic and practical concerns are inseparable (e.g., Axtell 1996, 2008), or that the moral and intellectual virtues are intimately connected (e.g., Zagzebski 1996: 158). For purposes of unifying the two levels of virtue it seems best to follow precedent rather than assuming that a distinction between epistemically and nonepistemically significant beliefs is feasible.

4. Process desiderata

Let us use the term *process desiderata* for ways in which a cognitive process, disposition, or faculty can contribute to our aim of acquiring significant true belief. I will briefly discuss a few chief process desiderata: reliability or truth-conduciveness; robustness, which for purposes of examining belief-forming processes it seems best to analyze as two separate factors, power and portability; and significance-conduciveness.

a) Reliability

Reliability is the tendency of a process to produce true beliefs rather than false ones; reliable processes are unlikely to lead us into error. Reliability has been extensively studied, and I need not say much about it here.

The one thing to note about reliability is that it comes in degrees. This is easiest to see on a statistical conception of reliability, on which reliability is the ratio of true beliefs to false beliefs in relevant environments. Lower degrees of reliability are lower ratios of true to false beliefs. We can, however, speak of degrees of reliability on safety-type conceptions as well, although the formulation

¹² See, e.g., Baehr 2006, Axtell & Carter 2008.

is more complicated.¹³ For simplicity of exposition, I mainly use a statistical conception here.

A process is reliable in the strong sense when it produces true beliefs with a high enough frequency, or safely enough, to generate knowledge. While the high-level virtues are surely truth-conducive to some extent, it is implausible that they are always reliable in the strong sense, i.e., reliable enough that whenever they are activated one is in a position to have knowledge. It seems, for instance, that just believing truly out of open-mindedness isn't sufficient for knowledge; surely one must also be open-mindedly trusting sources that are reliable authorities on the question. Thus, it seems implausible that everything believed out of open-mindedness, *just* by virtue of that, is trustworthy enough to be known.

b) Power

Power is the capacity or propensity to acquire or generate a large number of true beliefs. While reliability guards against error, power guards against ignorance, or the lack of true beliefs on important matters.

Power is only worthwhile when combined with a certain degree of reliability. It is no good acquiring lots of new true beliefs if the cost is acquiring even more false ones. At the very least, then, when evaluating power we also need to consider the proportion of false beliefs acquired. Goldman proposes that we can evaluate power just by looking at a subject's performance over a given subject-matter and considering the proportion of true beliefs she forms versus false beliefs or failures to form a belief (1992: 167-8). This is standard scholastic test procedure; one can certainly see tests as attempts to measure the power of a student's capacities to learn and recall a certain range of material.

While one can evaluate the power of individual cognitive processes, it is perhaps most interesting and most important for epistemic evaluation to examine the power of an *agent*, or the agent's entire bundle of processes, over a given

¹³ On a statistical approach, reliability requires a high truth-ratio across the range of environments normal for the agent (see Alston 1995). On a safety approach, the belief and its being true must co-occur over sufficiently close or relevant possible worlds (see Sosa 1996). This we can see as amounting to requiring a perfect truth-ratio over a smaller range of environments. Then degrees of safety are truth-ratios less than unity over close worlds.

subject-matter. The power of a single process is important for some purposes; for instance, when trying to decide how to conduct one's inquiries, it is important to initiate powerful processes (at least, powerful enough to yield true beliefs on the questions of interest). But having a weak process does not necessarily restrict the range of true beliefs an agent can acquire, because he might have other processes that can do the job. Noting only that the blind have no visual processes of any power at all exaggerates the extent of their disability. Their other perceptual processes are normally more powerful than average, especially with regard to true beliefs the sighted acquire through vision.

It is perhaps worth also noting that knowledge-generating processes can be quite weak. For instance, the mathematical capacities of the construction workers in Ceci's study lack power, because they only lead to true beliefs on problems that would arise during construction.

c) Portability

The portability of a belief-forming disposition is a matter of the range of environments in which it can generate true beliefs; a portable capacity is part of the agent's tool kit that she carries around with her and can access at all times. The term is due to Andy Clark (1997). For instance, my capacity to remember the tune of "When the Saints Go Marchin' In" is highly portable, since I can perform that operation in just about any situation.

Some knowledge-generating faculties (such as vision) are highly portable, but not all are. For instance, consciously reflecting on the evidence for a proposition is highly reliable and powerful, but is also slow and demands extensive cognitive resources. Thus it is not very portable, since it cannot operate in environments with temporal constraints or distractions.

Goldman (1986) identifies reliability, power, and speed as the chief process desiderata. Speed, however, seems mainly to be an aspect of portability. Often, the most important constraints on belief-formation in a given situation are temporal, and processes will fail to apply in that situation if they are too slow.

d) Significance-conduciveness

A trait can be also be valuable because it specifically increases one's propensity to acquire significant beliefs. Take, for instance, capacities for identifying dangers. These are characteristically very fast and portable, but also lead to many false positives. There is a certain amount of evidence that all primates, including humans, have innate processes that identify spiders and snakes as dangerous. In the northern climes where I live, the deliverances of these faculties are all false positives, since there are no poisonous spiders, and only one very rare poisonous snake. The value of having fast, portable danger-detecting capacities is the importance of having true beliefs about imminent dangers. This value is great enough that it is worth sacrificing some reliability to have it.

To take another example, faculties that contribute to the acquisition of understanding or wisdom should similarly be especially valuable because of their contribution to the significance of one's beliefs. This is particularly important to note when discussing the intellectual virtues, since it is quite plausible that some virtues make special sorts of contributions to these states.¹⁴

5. Desiderata of virtues

The account of portability for belief-forming dispositions I gave above is a special case of a more general property of cognitive processes—the range of environments over which they can operate. Likewise, we can generalize power to other processes; the power of a process is (loosely) the range of appropriate outputs that it can yield. These desiderata can be applied to capacities for using faculties well, or regulating inquiry and deliberation.

A regulatory disposition is powerful if it is applicable to wide ranges of faculties, types of inquiries, and the like. I am slightly nearsighted, and have learned to exercise a certain forbearance in accepting visual beliefs about objects at a distance from me. This is a weak sort of regulatory capacity, since it applies

¹⁴ See, e.g., Riggs 2003.

only to certain deliverances of a single faculty. In contrast, a general conscientiousness that discourages rash belief-formation in much or all of an agent's reasoning is quite powerful.

A regulatory disposition is portable if it is applicable in wide ranges of situations. Conscientiousness may not be all that portable, because the diligent reasoning it encourages takes time and effort. It is quite plausible, however, that a trait like open-mindedness is very portable, since it seems one can be open-minded over the gamut of human interactions.

High-level virtues, or other regulatory dispositions, will be especially valuable if they are powerful and portable. This value ultimately derives from their effects on other aspects of belief-formation. A powerful reliability-enhancing capacity (like a general conscientiousness) will be particularly valuable because it enhances the reliability of a wide range of belief-forming processes. Its own power will make its total effect on our propensities for success all the greater.

6. Evaluating knowledge and agents

Let us now turn to how a recognition of the full range of process desiderata can help us understand the interrelations between the two levels of virtue. I proposed above that low-level virtues are central to appraising knowledge, while high-level virtues are primarily involved in the appraisal of agents and their inquiries. For evaluations of beliefs, the reliability of their etiologies seems to be the paramount consideration. Our main concern in deciding whether to accept a belief is whether it can be relied upon to be true. Significance can be a factor in deciding whether to accept a belief, of course, but as I observed above, it doesn't matter for whether a belief is known. Thus knowledge-generating faculties must be highly reliable. Other process desiderata are at most secondary,¹⁵ perhaps even irrelevant.

¹⁵ Greco (2003), for instance, proposes that certain minimum standards of power and portability must be met for a disposition to yield knowledge. But even on that sort of account, reliability is a

For evaluations of agents, their faculties, and their inquiries, it seems that all the process desiderata are important; all the different ways of contributing to significant truth matter for such evaluations. Consider, for instance, the difference between deciding whether to accept a single piece of testimony and deciding whether someone is an authority to be trusted on a certain subject. In the former case, only reliability matters (provided the testimony is significant enough to be worth accepting). In the latter, power is just as important a consideration as reliability. Intelligence provides an even clearer example. Intelligence is one of most important axes on which we evaluate agents, and it is primarily a matter not of reliability but of power and speed (which, as we saw above, is an aspect of portability).

Let us apply these conclusions to the intellectual virtues. To have low-level virtues, one must have highly reliable faculties, but other process desiderata are not particularly important (if they play a role at all). High-level virtues, on the other hand, will contribute to significant truth in more general ways. They will often contribute to the power, portability, and significance of underlying processes. They will generally contribute to an improved truth-ratio, but not necessarily enough that they can be appealed to in support of knowledge-claims. Finally, high-level virtues can themselves be robust, viz., powerful and portable.

7. Examples

Let's look at a few examples of how different high-level virtues can be seen as contributing to our cognitive goal in the sort of way outlined above.

a) C-virtues

Any set of propositions has infinitely many implications, most of which are trivial. C-virtues (C for Cherniak) help us to trace through this “branching maze of consequences” (Morton 2004: 484) to find the interesting and important

much stricter standard for knowledge-generating processes than power or portability. It must be, in order to account for cases like Ceci's construction workers.

implications or presuppositions. C-virtues make only a small contribution to truth-ratio. If one's starting-points are all true, then their implications are all true; the C-virtues may help one find *reductios*,¹⁶ but would presumably have little other effect on reliability. They seem, rather, to primarily enhance significance, by helping us find the significant consequences of our beliefs rather than the dull or trivial ones. C-virtues also enhance power by making certain problems tractable. For instance, if one is trying to understand what consequences P₁ has for P₂, C-virtues help one find the routes through the implications of the former that lead to the latter.

b) Originality

Originality involves not just being able to come up with novel ideas but being able to apply them. Original thinkers don't just have novel or reckless beliefs; they can recognize when a novel idea provides a solution to an outstanding problem. Creative thinkers have been found to often have difficulty with latent inhibition, the capacity to screen from consciousness stimuli already determined to be irrelevant (Carson et al. 2003). In high-functioning individuals, decreased latent inhibition appears to contribute to originality. It is also known to contribute to schizophrenia.

Originality seems to have little benefit for truth-ratio. Original beliefs seem no more likely to be true than unoriginal ones, and possibly even less likely. After all, calling an idea "original" in the absence of other positive appraisals often bears the implicature that one thinks the idea false. However, originality greatly increases the power of one's belief-formation, by allowing one to acquire novel true beliefs. This enhancement of power appears to be its chief advantage.

c) Intellectual humility

Roberts and Wood (2003) argue that intellectual humility is a dispositional lack of concern with status or dominating the thinking of others, and a disposition

¹⁶ And note that just because a set of propositions lead one to a seemingly false or surprising conclusion does not automatically entail that they should be rejected. You need the H-virtues (H for Harman) for deciding what to do in those cases (see note 1).

not to claim unwarranted entitlements on the basis of one's actual or purported intellectual achievements. The humble inquirer is able to prevent considerations of attaining or preserving status or dominance from influencing his belief-formation. Roberts and Wood argue that humility is a only virtue in combination with other intellectual virtues. One can readily see that the brief formulation above does not distinguish between a virtue of humility and a lack of confidence that leads one to defer to others whenever possible. So we should perhaps say that the virtue of humility is the above trait conjoined with proper confidence in one's capacities.

Intellectual humility seems to enhance truth-ratio. The humble person's false beliefs are more likely to be corrected because the humble person will not ignore sources of information he perceives as inferior; nor will the humble person be inclined to avoid revising his beliefs out of a fear of losing status. Humility also increases power, by leading one to attend to and take seriously more sources of information. Roberts and Wood argue that humble persons will be more likely to accept testimony even when they personally do not have evidence for its truth. This tendency will greatly facilitate belief-formation on unfamiliar subjects. Humility should also contribute to portability, by encouraging the formation of true beliefs in situations in which considerations of status and dominance can lead one to ignore or combat criticisms rather than listen to them.

Humility also appears to contribute to the acquisition of particularly significant beliefs. Roberts and Wood argue that it contributes to self-knowledge. Humility seems to play an important role in the acquisition of wisdom. Baltes and Staudinger propose that wisdom is expert knowledge of the "fundamental pragmatics of life", viz. "the essence of the human condition and the ways and means of planning, managing, and understanding a good life" (2000: 124). They have developed this general idea into the Berlin Wisdom Paradigm, which consists of a set of criteria for wisdom and a theory of how it is acquired. One of their requirements for wisdom is a capacity to manage uncertainty, and particularly uncertainty that arises from human limitations. The self-knowledge to which humility contributes seems necessary for this. They also propose that

developing wisdom requires mentorship and tutelage from other wise persons; humility should help foster such relationships. There are probably other especially significant sorts of belief that humility facilitates, such as knowledge of other persons, interpersonal relations, or moral matters.

Moreover, intellectual humility as understood by Roberts and Wood is itself a robust capacity. A humble person is humble in all or nearly all situations in which one may be distracted from one's cognitive goals by considerations of status and dominance, and humility can improve all or nearly all of the many types of belief-formation that can be biased by such considerations. This robustness amplifies humility's effects on power, portability, and truth-ratio. Finally, so far we have seen why humility improves one's own belief-formation. Since the intellectual virtue of humility parallels the moral virtue of humility, it facilitates group inquiry and the communication of knowledge. One person's humility thus can enhance the power, portability, truth-ratio, and significance of the belief-formation of other persons as well.

8. An application: the problem of benighted virtuous agents

In the remainder of this paper, I will briefly discuss some applications of this framework, first to some outstanding problems concerning the virtues, and second to some implications for present and future research on cognition. I will use the term "the problem of benighted virtuous agents" to refer to a number of cases in which our attributions of intellectual virtue diverge from the agent's propensities to acquire significant true beliefs in her own environment. These cases are sometimes taken to demonstrate that what makes a disposition virtuous is not its contribution to significant truth. Thus these sorts of cases are sometimes thought to support epistemological internalism in general, and virtue responsibilism in particular.

Our present understanding of certain areas—particularly the physical and deductive sciences—vastly outstrips that of our forebears. Educated persons today are more likely to be right on a wider range of questions than even the great

minds of the past. People like Newton or Aristotle are regarded as exemplars of scientific virtue despite the fact that the reliability and power of their faculties are unexceptional compared to educated people today, and in some cases clearly deficient (Riggs 2003: 210-3).¹⁷

When we call Newton and Aristotle virtuous, we observe that they had robust traits that are greatly conducive to the reliability, power, and significance of their belief-formation. A well-educated but otherwise dull scientist today may lack those traits, which will detract from her capacity to acquire significant truths. It won't, however, detract nearly enough to outweigh the relative advantage that comes from powerful, accurate instruments and a wealth of background knowledge.

Similar considerations may help with explaining our intuitions regarding duplicates of ourselves who are brains in vats or victims of Cartesian evil demons. I won't attempt to give a response to these (much more complicated) cases here, but I will try to show that considerations of all the process desiderata can improve our understanding of what is going on.

The intuition here is that Einstein's brain in a vat, hooked up to a computer simulation giving him all the experiences he would have if he were regular old embodied Einstein, would have all of regular old Einstein's intellectual virtues, even though his faculties for acquiring beliefs about the external world would be completely unreliable.¹⁸ Like regular Einstein, vat-Einstein would have traits that are strongly conducive to reliability, power, and significance in a wide range of environments—just not his own. We should note that, intuitively, scenarios involving massive deception are counterfactually unstable. Things wouldn't have to be very different for agents to no longer be perfectly, completely deceived. Not far from the worlds in which we would be caught up in perfect deceptions are worlds in which we would be beset by incompetent demons or Windows-based computer simulations. Even in those

¹⁷ Montmarquet (1993: 21) argues similarly, but points to the fact that Newton and Aristotle are roughly comparable in virtue, although the former has many more true beliefs than the latter.

¹⁸ The clearest statement of the problem for virtue reliabilism seems to be Baehr 2007. Montmarquet (2000) discusses a similar scenario. The corresponding problem for externalism more generally, the "new evil demon problem", is widely discussed.

worlds, vat-Einstein's virtues would be conducive to the acquisition of his cognitive goals.

So while vat-Einstein would be massive deficient in reliability, in power and portability he would be roughly comparable to real Einstein. Since our appraisal of character depends just as much on the latter desiderata as it does on the first, vat-Einstein would not be quite as deficient compared to real Einstein as is usually thought. This observation may be useful in formulating a response to the new evil demon problem.

9. Another application: mid-level virtues

I want to close by pointing out a promising avenue for future research on intellectual virtues. The words that we have for low-level virtues describe particular faculties that agents can use in highly reliable ways. Our words for high-level virtues generally describe robust capacities that contribute to some or all of the process desiderata. In the gulf between these two levels, there should be what we might call "mid-level" virtues—regulatory capacities that contribute to our cognitive goals in ways like the high-level virtues, but that are not robust like traits like open-mindedness, humility, and conscientiousness.

These hitherto little-noticed virtues play an important role in our understanding of our own and others' cognition. For instance, suppose Quincy exhibits intellectual humility in calm situations when he feels confident. But when he is stressed or pressured, or after what he takes to be a direct attack on his person or capacities, he overcompensates with arrogance. Quincy lacks the virtue of humility as this is traditionally understood, since his humility is not a robust character trait. He has a localized virtue of humility—a control capacity that functions like humility but that applies in a narrower range of circumstances. Being less portable, Quincy's trait is less valuable than a robust humility, but it can nonetheless be important to identify it and the value it has. It means, for instance, that Quincy can be just valuable for group problem solving as a truly humble person would, as long as he is not pressured or offended. Quincy's

humility might even be something thin-skinned persons could seek to develop in themselves, if they believe that they cannot expect themselves to remain humble under pressure or attack but nonetheless wish to be the best epistemic agents they can.

A second category here includes virtues of resource management, or capacities we have for coping with our cognitive limitations and making problem-solving tractable. These can be specific to particular types of reasoning or to particular environments in which they are effective. Consider, for instance, a heuristic that allows us to simplify inductive reasoning. This might be reliable in certain environments or for certain types of problems, but diverge from canonical inductive reasoning in others. It may be quite fruitful for understanding such heuristics and strategies to take them to be narrow or localized intellectual virtues (a project initiated in Morton 2004).

Just as situationism presents a challenge to the existence of robust traits in the moral sphere, contextualist theories of cognition challenge the existence of robust intellectual traits.¹⁹ On the contextualist picture, cognition is made up of context-specific processes (i.e., weak and importable dispositions), rather than robust capacities like general intelligence or high-level virtues. I won't try to argue here for the existence of the high-level intellectual virtues. It is interesting to note, however, that there could be virtues that allow us to move from bundles of weak, importable processes to more robust capacities. Consider, for instance, a capacity to recognize when a problem in one domain is analogous to a problem in another domain that one can solve (such as a capacity to recognize that problems arising in juice factories are analogous to problems arising in construction). Such mid-level virtues may play an important role in the development of powerful and portable dispositions, and thus should be worth investigating.

In conclusion, I have tried to make it plausible that much of the distinctive value of the high-level virtues arises from their contributions to our cognitive goal

¹⁹ See Doris 1998 and Harman 1999 on the former, and Ceci 1993 and 1996 on the latter. Ceci is primarily concerned with arguing against the existence of a robust *g*, or general intelligence. However, many of his arguments can be applied against the existence or prevalence of traits like a robust humility or conscientiousness.

of significant true belief. This observation should allow for a unified theory of both levels of intellectual virtue, where virtues at both levels are defined by the same general principles. (Formulating those principles is something I haven't attempted in this paper.) This unified, broadly instrumentalist picture allows us to better understand how intellectual virtue and actual success can diverge, and moreover opens up a range of interesting new topics for virtue epistemology to examine.

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