Wondering is Wanting to Know

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To wonder is to want to know. Though it may sound like a truism, the philosophers who have recently considered this kind of analysis have all rejected it (Friedman 2013a; Carruthers 2018; Drucker forthcoming). In a way this is unsurprising, since analyses usually fail. Nevertheless, I hold that this analysis of wonder, suitably developed, is defensible. The bulk of this paper—§1 through §8—is an attempt at defending it. The concluding §9 comments on some implications for epistemology.

1. Preliminaries

I will start by giving my theory a name, initial formulation, quick explication, and preliminary defense.

> **The WTK Theory (v1):** *S* wonders *Q* iff *S* wants to know *Q*.

'*S*' is a variable, here implicitly universally quantified, ranging over what I will sometimes call agents. Whoever or whatever can manage to wonder or want to know is meant to be covered by the WTK Theory. This includes individual humans, but I assume it also includes many other animals and perhaps some groups as well.

'*Q*' is a variable ranging over question contents, also implicitly universally quantified here. The attitude verb *to wonder* is what linguists call a rogative verb: it takes interrogative rather than declarative complements.[1] I can be reported as wondering who is going to the party, where my umbrella is, why there's something rather than nothing, and so on, but I cannot be reported as wondering that my best friend is going to the party, that my umbrella is still on the bus, or that there is something rather than nothing. The content of a *that*-clause is a familiar propositional content. The content of a *wh*-clause is a question

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[1] Lahiri (2002, p. 287).

content. Just as there are different views on what exactly propositional contents are and how best to model them, there are also different views on what question contents are and how best to model them, but the WTK Theorist need not take any particular stance on this issue.

I have stated the WTK Theory with a mere 'iff', but I intend it to be committed to something stronger than the claim that the material biconditional is in fact universally true. How should the statement be strengthened? Some may be satisfied by my saying that the biconditional holds necessarily, others may want me to go for something still stronger: that it holds essentially or analytically, that it expresses a real definition or property identity, or what have you. Though I take the general question about analyses to be worth pursuing, I don't think the arguments I will be considering will turn on what kind of strengthening we use, so I will leave the connection merely as 'iff'. I will take it as a stand-in for property identity,[2] but the reader may take it as a stand-in for their own favored relation for thinking about philosophical analyses.

About *wants to know* I will have more to say later. For now let us note only that like *to wonder*, the verb *to want to know* takes interrogative complements. I can want to know who is going to the party, where my umbrella is, why there's something rather than nothing, and so on. Hence the *Q* that appears on the left side of the analysis also appears on the right.

The initial attraction of the WTK Theory is simple: for many questions there does not seem to be any significant difference between saying that one wonders it and saying that one wants to know it. The following pairs bear witness.

(1)   a.   I wonder who is going to the party.
           b.   I want to know who is going to the party.

(2)   a.   I wonder where my umbrella is.
           b.   I want to know where my umbrella is.

(3)   a.   I wonder why there's something rather than nothing.

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[2]On which, see Rayo (2013) and Dorr (2016).

      b.   I want to know why there's something rather than nothing.

Each pair seems true in just the same circumstances, and similarly for other pairs with different agents and different questions. And it's not just that they are true in the same circumstances; they seem to be saying just the same thing about those circumstances. This is just as the WTK Theory predicts, giving it some initial plausibility. And like any half decent analysis, it offers parsimony and a tight theoretical tie between independently interesting notions.

    Why resist the WTK Theory? No doubt readers are revving up their counterexample machines, and there are indeed several potential counterexamples to consider. Some will lead to refinements of the WTK Theory, but I will argue that none of them refute it.

    First, though, I want to note and defuse one other motivation for resisting the WTK Theory. Wondering seems to be a paradigm question-directed attitude (Friedman 2013a). It appears, as we have said, not to be directed towards propositional contents, but rather towards question contents. Philosophers like Friedman and Carruthers have been concerned with showing that such attitudes cannot be reduced to attitudes towards propositions, since they are advocating that epistemologists and philosophers of mind take question contents seriously. It may appear that the WTK Theory aims to be such a reduction and so should be resisted.

    I do not intend the WTK Theory as a reduction of wonder to propositional attitudes, however. I leave reference to question-contents on both sides of the analysis and do not assume that the right side can be further analyzed in terms of attitudes towards propositions. As far as I'm concerned, wanting to know is a question-directed attitude, just as wondering is.[3] I will be responding to specific objections made by both Friedman and Carruthers, but I sympathize with their larger aim and take the WTK Theory to be compatible with it.

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[3]Indeed, my own suspicion is that knowledge itself can be irreducibly question-directed. See George (2013) and Theiler, Roelofsen, and Aloni (2018).

2. Wondering States and Activities

Here's the first objection to the WTK Theory that we will consider: wanting is a state, whereas wondering is an activity or process—something that one does—so wondering cannot be a kind of wanting.[4]

This metaphysical difference, whatever exactly it amounts to, is reflected in the aspectual classes of the verbs. We can see that *to wonder* passes linguistic tests for being a non-stative, whereas *want to know* does not.[5] For example, the former but not the latter can be used with the progressive:

(4)   a.   My friend is wondering whether expressivism is true.
       b.   *My friend is wanting to know whether expressivism is true.

The WTK Theorist cannot simply brush this off as obscure metaphysics or misleading grammar, since we can leverage the objection to produce concrete counterexamples of an agent being in the state of wanting to know but not actively wondering. Here's Friedman: "[r]ight now I wish to know the answers to a whole range of questions having to do with the origins of the universe, but I'm not currently wondering about each of these questions" (Friedman 2013a, p. 154).[6] So it looks like wanting to know isn't sufficient for wondering, which would mean the WTK Theory fails.

My response to this objection appeals to the distinction between *occurrent* and *non-occurrent* mental states. Goldman introduces the distinction as follows:[7]

> John is concentrating on finishing the lawn by six o'clock.
> He is giving all his attention to mowing it as quickly as

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[4]This objection appears in Friedman (2013a, p. 154) and Drucker (forthcoming, pp. 10–12).

[5]On the linguistic tests, see Vendler (1967, Ch. 4) and Parsons (1990, §3.6). On the metaphysics of this distinction, see Steward (1997) and Skow (2018). And for the origins of these ideas, see also Aristotle's *Metaphysics* Θ.

[6]And here's a case from Drucker: "I do want to know how they got that gash, but I don't have time to wonder about that now" (Drucker forthcoming, p. 10).

[7]Goldman credits Alston for the distinction, but seems to be the first to have used this terminology in print. The distinction itself goes much further back, arguably again to Aristotle.

> possible, with the thought of getting it done by six. During
> this period, whether it be a few seconds or a whole minute,
> John has an *occurrent* want to finish mowing the lawn by six
> o'clock. The thought of finishing the lawn by six *occurs* to
> him, occupies his attention, fills his consciousness. It is a
> datable event or process. During the same period it would
> also be correct to say that John wanted to be president of his
> company. But his wanting to be president of the company is
> not an *occurrent* want during this time, for John has not been
> thinking about the company or his future at the company.
>
> Goldman (1970, p. 86)

This distinction applies to belief, intentions, hopes, and so on, but for us it is only important that it applies to wants. And while there are different theories of how to understand what differences the distinction marks, I take it to be clear enough as it stands for present purposes. All we need is that while a want can be a state and not an activity, there is also a kind of wanting—occurrent wanting—that is an activity, a datable event or process, something that one does.

My response to the objection, then, is to grant that there is indeed an activity of wondering. But I say this is just occurrently wanting to know. I also add that there is a non-occurrent wondering state which is a non-occurrent want to know.[8]

Friedman is right that we can report her lack of wondering activity by saying that she wants to know but isn't wondering. But we can also report it by saying that she has a standing want to know but not an occurrent want to know, or even that she *wonders* various questions about the origins of the universe but is not wonder*ing* them right now. This only appears to be an objection to the WTK Theory if we overlook that there are wanting activities and wondering states.

My response to the objection is compatible with the preliminary statement of the theory, but it is worth introducing a new version that

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[8]There may well be some further analysis possible here. Perhaps the non-occurrent wondering state can in some way be reduced to some relation to the occurrent state or vice versa, or perhaps there is some distinct state which they can both be reduced to. But I will not pursue this issue here.

incorporates it explicitly.

> **The WTK Theory (v2):**
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> i. *S* wonders *Q* iff *S* **non-occurrently** wants to know *Q*.
>
> ii. ***S* is wondering *Q* iff *S* is occurrently wanting to know *Q*.**

3.   Wondering While Wanting Not to Know

From time to time you might find yourself wondering when you will die. But knowing the answer risks inducing debilitating anxiety. Realizing this, you might prefer not to know. So it seems that you sometimes wonder when you will die, even though you don't really want to know. We thus have another apparent counterexample to the WTK Theory.

My response to this objection is to once again appeal to a distinction between kinds of wanting. There are many things that we feel some pull towards and in some sense want, even if on the whole we would rather not have them and so in another sense do not want: another slice of cake, an impromptu vacation, revenge, and so on.

As Davis ([1984](#)) observes, one can truly report one's attitudes in such cases in two different, apparently conflicting, ways:

(5)   a.   I want to play tennis today, but I have to teach.
       b.   I don't want to play tennis today since I have to teach.

We can, as in (5-b), talk about our *all-things-considered* wants, but we can also talk about our *some-things-considered* wants, as in (5-a). As with the occurrent/non-occurrent distinction, giving a theory of the all-things-considered/some-things-considered distinction is not easy, but nor is it necessary here.[9] The intuitive distinction should suffice.

To avoid the potential counterexample of wondering but not wanting to know, we can say that wondering is a kind of some-things-considered wanting. When one finds oneself wondering when one will die, one does indeed want to know when one will die, but only in the way one wants to shirk one's responsibilities and go to the beach while not

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[9]See Phillips-Brown ([2018](#)) for a recent discussion of how various theories have trouble with this distinction.

wanting to do so all-things-considered. This would be a problem if we aimed to identify wondering with all-things-considered wanting, but it is expected if we identify it with some-things-considered wanting. By reformulating the theory to make this explicit, we avoid the objection.

> **The WTK Theory (v3):**
>
> i. *S* wonders *Q* iff *S* non-occurrently **some-things-considered** wants to know *Q*.
>
> ii. *S* is wondering *Q* iff *S* is occurrently **some-things-considered** wanting to know *Q*.

4. Satisfying Wonder

Wants have satisfaction conditions and can be said to aim at their own satisfaction. Though there are various ways one's want to ϕ might be caused to dissipate, it can be satisfied only if one ϕs.[10] One way to object to the WTK Theory is to deny that wondering has the same satisfaction conditions that wanting to know has.

Drucker, in effect, makes an extreme version of this objection. According to him, wondering "is not the sort of state or attitude that can be satisfied" (Drucker forthcoming, p. 10). It doesn't have satisfaction conditions at all, let alone the same satisfaction conditions that wanting to know has.

The evidence Drucker gives for this comes from an interesting linguistic observation he makes: while one can speak of one's desires (or one's curiosity) being satisfied, one cannot speak of one's wonder being satisfied.

(6)   a.   Winning the lottery would allow me to satisfy every desire
I have.

     b.   Satisfy my curiosity: what did she tell you?

     c.   #Satisfy my wonder/wondering/wonderment: what did she
tell you?

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[10]Is ϕ-ing sufficient to satisfy a desire to ϕ? Difficult question; see Lycan (2012), Fara (2013), and Grant and Phillips-Brown (2020) for discussion.

I do not have a good explanation of this contrast. Still, I am not convinced.

For one thing, though I agree (6-c) sounds bad, googling does turn up some not so unnatural examples, like (7).

(7)   Back in grad school I studied comets and always wondered what it would be like to land on a nucleus [of a comet]. With Rosetta [a space mission], that wonder was satisfied.

More importantly, assuming that wants can be satisfied, the test is too restrictive:

(8)   a. ??Satisfy my want/wanting: give me a coffee.
        b. #Satisfy my want/wanting to know: what did she tell you?

Perhaps most important, though, is that the satisfaction vs. mere dissipation distinction seems a natural and theoretically useful one to apply to wonder.

For the case of an ordinary want, consider a birder who wants to see a Peregrine Falcon. There are at least a few ways this want might go away: (i) the birder might actually see a Peregrine Falcon (and realize they have done so), (ii) they might mistakenly take themselves to have seen a Peregrine Falcon or, allowing ourselves a sci-fi scenario, (iii) they might take a pill to make this want go away. There is a sense in which things go well with respect to the want in the first case—in which the desire is satisfied—in a way they don't in the others. The distinction between satisfaction and mere dissipation seems like an important one to make.

Now for the case of wondering, consider a jilted lover who wonders why they were abandoned. There are a few ways this might go away: (i′) they might actually come to know the reason (and realize they have done so), (ii′) they might mistakenly take themselves to know the reason, say through false or unreliable testimony, or (iii′) they might take a pill to make themselves stop wondering. There is a sense in which things go well with respect to their wondering in the first case—much like in the case of a want being satisfied—in a way they don't in the others.

This again seems like an important distinction to make. The parallel is striking, and suggests we should take wonder to be the kind of state that can be satisfied, as we would expect on the WTK Theory, even if we agree that utterances like (6-c) sound off.

This answers Drucker's version of the satisfaction objection.[11] It also helps us see why we should take wondering *Q* to be wanting to know *Q*, as opposed to something weaker, like wanting to believe an answer to *Q*.[12] One will likely stop wondering *Q* once one has formed a belief that would answer it, as in (ii′). But in such a case it seems that the wondering has not been satisfied in the way it has when one comes to know the answer. It is like (ii), where the birder's desire to see a Peregrine Falcon goes away because they think they have seen one. Taking the wonderer to merely want a belief is to make the same mistake as taking the birder to merely want to believe they've seen a Peregrine Falcon.

I expect we'd have a similar feeling about other proposals for wonder's satisfaction conditions that are weaker than knowing *Q*, such as true belief or justified true belief. If Smith from Gettier (1963) had been wondering whether the man who will get the job has ten coins in his pocket, it seems to me that this wonder is not satisfied by his justified true belief. His wonder is satisfied only when he finds out the good news, counts the coins in his own pocket, and comes to know the answer.

5. Is Knowledge Enough?

We can take the satisfaction objection in the other direction, though, and worry that knowing is not strong enough to satisfy one's wondering. Perhaps wondering involves not just wanting to know *Q*, but wanting to come to know *Q* in a particular way.

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[11]It does not, though, provide us with a good explanation of his data. I hope an explanation will emerge at some point, but even if it doesn't, I don't think this should make us give up the WTK Theory, for the reasons given above.

[12]Peirce (1877, §IV) seems to claim that wonder (what he calls 'doubt') is satisfied by belief. Frankfurt (1958) criticizes Peirce on this point along much the same lines as I will.

In fact I think an objection from this direction might in the end succeed. But I view this not so much as a challenge to the WTK Theory as an in-house debate among what we might call WTK$^+$ Theorists: those who take wondering Q to be wanting to K^+ Q, where to K^+ Q involves knowing Q but may also involve something more. The rest of this section will present some pressures to move to something stronger than knowledge as well as the reasons why I am also not yet convinced that we need to do so.

One promising stronger-than-knowing-Q alternative is finding out Q. Usually when one goes from not knowing to knowing one must do so by finding out. But we can imagine cases where these might come apart.

First, in cases of *passive knowledge acquisition*: one might come to know something in an entirely passive way which might not involve finding out. Suppose one could upload information into someone's brain while they are asleep. Then someone might go from not knowing who Hume met in Paris to knowing who Hume met in Paris through this process. I am not confident about how to describe this case, but it is at least not obvious to me that they would have found out who Hume met in Paris. We might take finding out to involve some kind of mental activity, whereas this person simply lacked that knowledge, then came to have it.[13]

Second, in cases of *practical knowledge*: one might go from not knowing to knowing by acting to make some answer the true one. Right when I wake up I might not know what I am going to eat for breakfast. Then at some point I decide to eat bran flakes and thereby know what I will eat for breakfast. It's again not clear what to say here, but this is at least not a clear case of finding out.

Third, in cases of *belief-to-knowledge transitions*: one might come to know Q by going from an unjustified or Gettiered belief in the correct answer to Q to knowledge of that same answer. Perhaps one previously only based one's belief on unreliable testimony, and now it has been

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[13]Potentially we can find more realistic cases where one acquires knowledge in a passive way through hardwired biological development. But for present purposes I suspect realism would only add complexity and invite needless controversy.

corroborated by further testimony that is reliable. In this kind of case one goes from not knowing to knowing without clearly finding out.[14]

To cause trouble for the pure WTK Theory, we would need to have a case where someone's want to know *Q* would be satisfied but their wondering *Q* would not be. Do any of the above get us this?

Passive knowledge acquisition cases seem to me to involve satisfying wonder, in the way that wants can seem to be satisfied by some unexpected event. Consider someone who wants to have a mullet and so plans to go to their stylist later in the week. Suppose an intruder cuts their hair while they're asleep, in exactly the mullet style they had planned to request. The victim of the mulletting, of course, has a legitimate complaint against the intruder, and some other wants of theirs might still be unsatisfied, like their want to catch up with the hair stylist. But it seems nevertheless that their want to have a mullet has been satisfied. Similarly, I think, with an unrequested knowledge upload. One would have a legitimate complaint about it and might have various related wants still unsatisfied, like a want to feel a certain sense of achievement or a want to catch up with the librarian. But it seems to me that one's wonder, like one's want to know, has been satisfied in such a case.

Let us now turn to practical knowledge cases. In matters where one has complete control, one typically doesn't wonder about what one will do, as opposed to what one *should* do, particularly when it comes to questions about relatively small matters like what one will eat for breakfast. But it can be natural to wonder what you will do when some momentous choice is hanging over you, when you expect to be put in an unfamiliar situation and have to react quickly, or when you only have partial control over whether you perform some action. Someone might wonder whether they will decide to try to have a child, how they would react in an emergency situation that calls for heroism, and whether they will win this round of the card game. Perhaps they will eventually know the answers to each these questions through some

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[14]One may have found out over the longer time span that includes times before one had the initial belief, but the important point is that there is some time span—one that starts after one has the initial belief—over which one goes from not knowing to knowing without finding out.

decisions they make. But it seems to me that the knowledge obtained in this way would straightforwardly satisfy their wonder. So I don't think we should revise the WTK Theory to rule out satisfaction by practical knowledge of this kind.

That said, there are some mixed cases that seem more problematic. Some questions normally *would* be settled more or less independently of your actions but still *could* be settled by your actions.

Suppose, for example, that as a good town citizen you wonder who will win the local water board election. The normal way to know who will win (or, after the fact, who won[15]) is non-practical: getting some information that epistemically settles the issue, perhaps from the local newspaper. But one can also have practical knowledge of who will win through rigging the election for a particular candidate. Suppose you rig the election out of some compulsion, not so that a candidate you favor will win—perhaps you don't even have a preference—but just because you can no longer take uncertainty; you really want to know. And suppose that in doing so, you come to know who will win. Then you wondered and came to know. Some might take this to be a case of satisfying your wonder, in which case there is still no problem for the WTK Theory. My own reaction is that it is unclear, but that it's at least plausible that your wonder was not satisfied.

In response, the WTK Theorist might remind us that there is a general issue about desire satisfaction in the vicinity, which shows that the obtaining of a desire's content does not always suffice for satisfaction. If someone wants to ϕ but ends up ϕ-ing in certain kinds of abnormal or bad ways, then it is tempting to say that their desire has not been satisfied, even if they have knowingly ϕ-ed. Lycan (2012, p. 206) gives vivid examples:

> Suppose you desire to have lunch. Helpfully, I force-feed you twenty-five old and soggy Brussels sprouts, each covered in suppurating mold. "(Ghack, gag), not *that* lunch!" Or you desire to be famous. You publish something, but it contains a fallacy so incredibly stupid that the news of your

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[15]Despite the difference in tense, I am inclined to view this as expressing the same question content, but do not take anything significant here to ride on this assumption.

gaffe spreads to the entire English-speaking world. "I didn't mean *that* way / famous for *that*."

We might try saying that knowing through rigging does not satisfy your wonder because it is not the right way to come to know.

I think this response is inadequate. After all, in the rigging case you did want to know who will win and this want does seem to have been satisfied. But the response would imply that this want was not satisfied, since it identifies this want with your wondering. What instead seems to be going on in this case is that at the time you are deciding to take matters into your own hands, your wondering disappears without satisfaction, though you are still wanting to know. This is a problem for the WTK Theory and counts in favor of a theory that says wondering is wanting to find out, since it's plausible that you no longer want to find out once you are deciding to rig the election.

I still think the problem may be avoidable, though, through a revision to the WTK Theory that can be independently motivated by the belief-to-knowledge transition cases.

There aren't any clear problem cases from belief-to-knowledge transitions, since it seems one cannot straightforwardly take one's own belief to be unjustified or Gettiered and want to find solid enough justification to turn it into knowledge. Suppose I realize that my only source's testimony that the cafeteria has good salads happens to be unreliable. Here is what I would not do: recognize my belief is not yet knowledge and desire further justification so I can come to know that the cafeteria has good salad. Rather, I stop having the belief and go back to wondering whether the cafeteria has good salads.

I do want to grant, though, that if there were a case of someone wanting to turn a belief into knowledge by getting further justification, this wouldn't be a case of wondering, but it would be a case of wanting to know. Perhaps there is some such problem case, even if I haven't thought of it. But if there is, I think we can avoid it by appealing to a mild kind of contrastivism about wanting.[16] We can say that when one

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[16]Though this would fit well with more ambitious contrastivisms about wanting that claim *all* wants are contrastive, we need here only the much weaker claim that *some* wants are contrastive.

wonders Q one wants to know Q *as opposed to* something else, where this something else does not include anything like 'continuing to have an unjustified belief in an answer to Q'. I suggest that we take it to be something along the lines of 'remaining in suspended judgement about Q'.[17]

Though we may not yet be forced to do so, I think it is still a good idea to introduce a modification to the WTK Theory to incorporate a contrastivism along these lines.

> **The WTK Theory (v4):**
>
> i. S wonders Q iff S non-occurrently some-things-considered wants to know Q **as opposed to remaining in suspended judgment about Q**.
>
> ii. S is wondering Q iff S is occurrently some-things-considered wanting to know Q **as opposed to remaining in suspended judgment about Q**.

I said that this revision may also help us with the knowing through rigging case. It is important to that case that you are in a position to know the outcome through acting, as opposed to merely making some outcome more likely, since otherwise it would only be a case of partial control, where your eventual coming to know the outcome would be a clear case of wonder satisfaction. Given this, there seems to me to be a sharp contrast between, on the one hand, wanting to know who will win and suspending judgement about it, and, on the other, wanting to know who will win and practically deliberating about who to make win. It seems plausible to me that there is a kind of suspension of judgement about a question which is incompatible with practically deliberating about the same question. So if we take that kind of suspended judgement to appear in this new contrastive version of the WTK Theory, we will get the result that you are no longer wondering

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[17]For some recent discussions of suspended judgement, see Friedman (2013b, 2017), Staffel (2019), Raleigh (2021), McGrath (2021), Lord (2020), Masny (2020), and Wagner (2021). I do not have a view on how to think of suspended judgement and am open to there being multiple useful theoretical notions in the vicinity. It would be nice if one or more of the previously developed accounts fit my purposes well, but I would not take it to be disastrous if some specially tailored account ends up being required.

once you are practically deliberating about who to rig the election for. This would mean that this version of the theory can predict that your coming to know the outcome through rigging would not satisfy your wonder, since you had stopped wondering before you came to know.

Whether there is a good account of a kind of suspended judgment that would give us the required incompatibility with practical deliberation and not lead to other problems is a question I will leave for another occasion. Currently the WTK Theory still looks plausible to me, but I allow that we may ultimately have to move to some other WTK$^+$ Theory.

6. Wondering How

Many kinds of questions beginning with *how* present no problem for the WTK theory. I want to know how touchscreens work, how brain activity relates to phenomenal experience, how migrating butterflies navigate, and how long human-descended life will continue. These are all things I wonder.

Certain infinitival *how*-questions present us with a puzzle, however. I want to know how to play piano, how to speak good German, and how to program multi-agent simulations with GPU shaders. But it seems wrong (or at least odd) to say that I wonder how to play piano, that I wonder how to speak good German, or that I wonder how to program simulations with shaders. Why is that? And are these counterexamples to the WTK Theory?

Note that some infinitival *how*-questions can be wondered. I wonder how to get to my new office, how to cut some particular manuscript to keep it under a word limit, and how to best go about learning German. As a very rough first pass, we might say that the difference is that for these, what one needs in order to know how is just some information which can be fully communicated with a single utterance. I cannot come to know how to speak good German by someone just telling me. But I can come to know how to go about learning to speak German this way; someone can tell me that I really must immerse myself in a German speaking community or that I should use these or those apps.

Similarly I can come to know how to get to my office and how to cut my manuscript from hearing a couple brief utterances. But that will not suffice for getting me to know how to play the piano or how to program with shaders.

So it seems we should distinguish what we might call infinitival *how*-questions of information and infinitival *how*-questions of skill.[18] The former can be assimilated with *who*-, *what*-, *where*-, *why*- and other *how*-questions that we wonder, as these also just require some information for us to come to know.[19] The *how*-questions of skill, though, seem to behave differently. They don't seem to be proper objects of wonder.

We might think, then, that the WTK Theory needs to be further modified to say that that the question contents its '*Q*' ranges over must be limited to informational question contents, however exactly these are to be specified. I suppose this would work, though without some further story it seems somewhat ad hoc. Why should wondering be restricted in this way? Fortunately, I think we need not make such a modification, since there is a way to derive the right result from WTK (v4).

Recall that this version of the WTK Theory takes wondering to be wanting to know *Q* as opposed to remaining in suspended judgement about *Q*. But it seems that whereas one can be in suspended judgement about informational questions, like who will win an election or how to cut the manuscript, in the relevant cases one is not in suspended judgement about questions of skill. I am not in suspended judgement about how to speak good German or how to play piano.[20] This raises the

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[18]This may seem like a boon to anti-intellectualists about knowledge how, who might say this distinction is exactly tracking the kind of non-propositional knowledge how that they posit. But as far as I can see the standard intellectualist maneuvers, like appealing to practical modes of presentation (Stanley and Williamson 2001; Pavese 2015), would work as well here as they do in their original contexts. It may be worth exploring in more detail how this would play out, but I do not wish to enter that fray here.

[19]It is worth emphasizing that the heuristic introduced above for distinguishing the *how*-questions will not work in all cases. This is especially clear once we extend the grouping to these other kinds of questions. I can wonder what it is like to be a bat, but cannot come to know this through being told.

[20]One can cook up cases where one is in suspended judgement towards questions that are expressed by the same words. For example, someone might know how to speak German in two ways and suspend judgment about which of them is the way to

interesting and, I suspect, fruitful question of why suspended judgment does not seem to apply to questions of skill. I do not think the WTK Theorist needs to commit to any particular answer to it, though, so I will not try to develop one here.

7. Wondering and Metacognition

Wondering Q seems to be a directive representation. It represents some question as to be answered, and is typically motivational and goal-directed in a way purely indicative representations like beliefs are not. But what is the content of a wondering Q representation? The WTK Theorist says it is a directive attitude (a some-things-considered want) with the content '[the agent] to know Q'.[21] Others—Friedman (2013a, p. 155) and Carruthers (2018, pp. 132–133)—object that this cannot be right, since even animals who lack metacognitive capacities can wonder.[22] They conclude that the content of wondering must just be Q, and what is to be done with respect to Q (namely to know it) should be taken to be part of the attitudinal relation to the content, rather than being in the content itself.

My dog, for example, might wonder what is making some particular sound. But it's plausible that he lacks the concept KNOWLEDGE (to say nothing of SUSPENDED JUDGMENT), and so can't have any wants concerning his own or anyone else's knowledge. So he can't want to know what is making that sound. So it seems wanting to know is not necessary for wondering and the WTK Theory is thus refuted.

It's worth emphasizing that Friedman and Carruthers both grant that non-human animals have wondering states which motivate them to know answers to particular questions. Theirs is not a general skepticism about attributing contentful mental states to non-human animals. Nor

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speak good German, in which case we might describe them as suspending judgement about how to speak good German. But this is now, it seems to me, an informational question. And as we would expect on this version of the WTK Theory, it does seem like such a person could wonder how to speak good German.

[21]I assume "wants to know Q" involves an unpronounced subject control pronoun PRO_s, implying a *de se* representation of the agent (Ninan 2010). This is how I am thinking of the "[the agent]" part of this content specification.

[22]See also Whitcomb (2010) and Kvanvig (2003, pp. 145–146).

is their concern even about animals' sensitivity to whether they know an answer to a question or not, since they take the wondering states to be sensitive to this.[23] But once all this has been granted, then I'm as happy saying that my dog wants to know what's making that sound as I am saying that he wonders what's making that sound or that he wants to eat that treat. In response to "Why is he going into the other room?", I don't find "Because he wants to know what's making that sound" more objectionable than "Because he wonders what's making that sound" or "Because he thinks someone dropped some food". It is natural to make such an attribution about wanting to know without assuming or even pretending that my dog has very sophisticated abilities to explicitly and consciously represent his own or others' representations. One might back off such assertions if someone raises doubts about attributing to dogs human-graspable contents or the same kinds of attitudes that we attribute to humans, but this backing off would apply to wonder ascriptions just as much as wanting-to-know ascriptions.

But why was it tempting to think that my dog lacks the concept KNOWLEDGE, specifically? Perhaps it can be traced to assumptions about the lack of flexibility, generality, and/or explicitness in dogs' representations of their own and others' mental states. Most non-human animals don't seem to reason much, if at all, about what others in their environment do or do not know.[24] Some philosophers take such criteria to be constitutive of concept possession, in contrast with being able to think some content 'non-conceptually', so it's not implausible to say that my dog lacks the concept KNOWLEDGE.[25]

Note, however, that the WTK Theorist need not dispute any of this. If we have such demanding requirements for possessing KNOWLEDGE, then it is no longer plausible that possessing KNOWLEDGE is required for

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[23]Friedman says that wondering is "relieved by coming to know (or something similar)" (Friedman 2013a, p. 145) and Carruthers says that knowledge extinguishes curiosity (Carruthers 2018, p. 134) and I assume he would say the same for wondering.

[24]Though I suspect we typically underestimate many social animals' abilities on this score. For a recent defense of taking explicit representations of others' knowledge states to be wider spread than previously thought, see Phillips et al. (2020).

[25]On this 'generality constraint' and its relation to nonconceptual content, see Evans (1982), Camp (2004), Heck (2007), and Beck (2012). I myself reject the generality constraint (at least in its stronger variants) and don't take the conceptual/non-conceptual content distinction to mark a sharp divide.

wanting to know what made some sound. I can think my dog wants to know what made that sound without thinking that he explicitly reasons about knowledge states, that he can freely recombine representations of knowledge states with many other representations, or that he has any theory of other minds. For attributing such a want, it seems to be enough that there is a motivational state of the right kind that is sensitive in a certain way to whether he knows what's making that sound.[26]

Compare this to what we might say about attributing other mental states to animals. Unless one is using very high standards for attributing wants, we can truly say that my dog often wants to eat something. But I don't think we would thereby be committed to thinking that he has a full-blown TO EAT concept that is as flexible, general, or as available for explicit reasoning as adult humans' TO EAT concept typically is. Someone defending an analysis of hunger as wanting to eat need not attribute sophisticated or flexible representations of eating to all hungry creatures. Similarly, we WTK Theorists need not take all wonderers to have these kinds of representations of their own knowledge states.

This is admittedly a rather thin sense in which a creature can be said to represent their own knowledge. Possessing such an ability leaves open whether they have the more sophisticated abilities of interest to many psychologists, ethnologists, and philosophers of mind working on metacognition. This allows the WTK Theorist to refrain from picking sides in most of the debates about these abilities, but may also make this issue we're considering of less interest to them. We can even go so far as to grant to Carruthers that for certain purposes, allowing for 'implicit metacognition' of this kind "trivializes the notion" of metacognition (Carruthers 2018, 139, n. 6).[27] But whether a creature has those less

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[26]One suggestion along somewhat similar lines is that while the dog may not be able to represent his own future knowledge state *de dicto*, he does represent it *de re* (Carruthers (2018, p. 133), Drucker (forthcoming, p. 9)). But the *de re/de dicto* distinction seems to me to be an orthogonal one to what we need. I am happy to allow that my dog represents his own knowledge state *de dicto*, and it is not clear that moving to a *de re* thought would help. What would the *res* be? Some future knowing Q state of the dog, I suppose. But why think it can represent that without representing knowledge? And what are we to say when there is no actual future knowledge state? See also Whitcomb (2010, p. 670) for similar sorts of concerns.

[27]Though I happen to agree with Proust (2013, p. 89) that it does not.

trivial capacities is tangential to the WTK Theorist, who only needs to say that when we're using standards according to which it's true that my dog wonders what is making that sound, it's also true that my dog wants to know what is making that sound.

That is my first response to the objection from metacognition. Though it may suffice as a defensive maneuver, I think we can do better.

8.   A Speculative Positive Argument from Teleosemantics

Recall that the metacognition objection started from the assumption that a particular wondering Q state is a directive representation. At issue between the WTK Theory and the relevant opponents is what the content of this representation is. Is it, as the WTK Theorist claims, something like '[the agent] to know Q', or is it something less involved, such as simply 'Q'? One way to make progress in this dispute is to consider the question of what determines contents of mental representations in general.

There is of course no uncontroversial answer to this general question, either with respect to the big picture or the details, and even the best worked out answers leave many gaps and have various apparent problems. There will thus be a limit to how much dialectical progress we can make by taking this route. But it is illuminating to make the attempt, nevertheless.

My own view is that some variant of teleosemantics must in the end be a big part of the story of how humans' and other animals' mental representations have the contents they do. That is, at least many mental representations have the contents they do at least in large part because of the biological function those representations have.[28] Ruth Millikan's work has been central to making the case for teleosemantics and constitutes one of its most thoroughly developed variants (Millikan 1984, 1995b, 2004; Ryder, Kingsbury, and Williford 2013).[29]   I will

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[28]I am also open to using a broader than evolutionary notion of function. See Shea (2018) for reasons to do so.

[29]See Neander (2017) and Shea (2018) for others. In contrast with Millikan's, neither

show that when we take Millikan's theory together with a reasonable assumption about the function of wondering representations we can derive that the content of wondering Q representation is something like '[the agent] to know Q'. This applies to non-humans as much as to humans, and so gives us a more satisfying response to the metacognition objection. It also suggests a positive argument for the WTK Theory.

Millikan's theory is complex, but we can here omit most of it, focusing only on her view of directive contents. Here is one of her summary statements of what makes a representation directive and what determines its content:

> A representation is *directive* when it has a proper function to guide the mechanisms that use it so that they produce its satisfaction condition. Like a blueprint, it shows what is to be done.
>
> (Millikan 1995a, p. 189)

We are assuming that a given wondering Q is a directive representation, so if Millikan's account is on the right track, it must have a function to guide the mechanisms that use it so that they produce its satisfaction condition—its content. What, then, does a wondering Q state have the function of guiding other mechanisms in the agent to produce? I say: that the agent know Q. And if that's right, then its content is just '[the agent] to know Q'.

That this is a given wondering Q's function may be disputed. There is no uncontroversial means for determining a biological function, even granting the controversial supposition that particular representations have such functions. And however we take function to be determined, it would involve some empirical work, as well as enough agreement about what constitutes knowledge, to establish my claim that a wondering

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of these theories are meant by their authors to extend directly to agent-level wants, but my sense is that Shea's theory would work for the WTK Theorist about as well as or perhaps better than Millikan's theory, whereas Neander's, with its 'low church' use of lower levels of description in determining function, is less likely to be a good fit for the WTK Theorist. That said, Williams (2020) builds an interpretationist theory atop Neander's teleosemantics and I suspect his theory and other forms of interpretationism are good candidates for supporting the WTK Theory, given that a desire to know Q would rationalize the Q-wonderer's dispositions to behave.

Q's function is to guide the mechanisms that use it to bring it about that the agent wondering knows *Q*. For now, though, the most I can say is that the assumption seems to me a very plausible one.

I can also say, though, that Friedman and Carruthers themselves make very similar assumptions. According to Friedman, wondering and other interrogative attitudes

> . . . are the attitudes at the centre of the search [for new knowledge]. Crucially, they each, in some sense, presuppose ignorance on the relevant matter and are resolved or satisfied when a particular kind of new knowledge comes in. Curiosity, wondering, inquiry, investigation, and agnosticism are all relieved by coming to know (or something similar).
>
> (Friedman 2013a, p. 145)

It doesn't seem a large step from this to say that the reason wonder is at the center of the search for knowledge and is relieved by coming to know is because its function is to guide the agent to acquire new knowledge. Carruthers comes even closer to assuming just what I need. He says that curiosity, which he generally treats together with wonder,

> recruits and motivates actions that have been sculpted by evolution and subsequent learning to issue in new knowledge (moving closer to the target of the question, looking at it, sniffing it, and so on).
>
> (Carruthers 2018, p. 138)

So he seems to agree that wonder's biological function is to issue in new knowledge.

Making a plausible (and plausibly shared) assumption about the function of wondering states, then, a major and promising line of thought about what determines representations' contents in general predicts that '[the agent] knows *Q*' is the content of a wondering *Q* state.[30] This is enough to bolster the response to the metacognition

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[30]In order to get to the contents in our final version, WTK (v4), we would need to extend teleosemantics to contrastive attitudes and would likely need a stronger

objection. It is not merely that we *can* take wondering animals to have attitudes directed towards contents about their own knowledge states, there is at least some independent reason to think that we should.

This also gets us close to a direct argument for the WTK Theory, though not quite all the way there. We need not think that all directive representations are wants. Plausibly an intention is a directive representation, for example, and need not be identified with nor even taken to imply a want. So the WTK Theory might be false even if it's true that a wondering state is a directive representation with '[the agent] to know Q' as its content. What's needed to get to the WTK Theory is that the particular kind of directive it is is a some-things-considered want. To fill in this gap we would need to appeal to a theory of wants as well as a theory of content-determination.

Again there is too much controversy to hope for an argument that is simple enough to state here without taking on assumptions that many will reject. So I will again settle for taking a theory I find promising off the shelf and seeing what it would say. In this case, I will use the reward theory of desire from Schroeder (2004) and Arpaly and Schroeder (2014). Central to this theory of desire is the notion of reward from reinforcement learning. What it is "to have an intrinsic appetitive desire that P is to constitute P as a reward" (Arpaly and Schroeder 2014, p. 128).[31]

On their interpretation of reward, what this means is that the agent is disposed such that representations of P's obtaining cause a

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assumption about the function of wondering. This would certainly be a non-trivial undertaking, but I am optimistic about its chances of success. Pursuing this may also be a good way to fill out the details of what kind of suspension of judgement should appear in the account.

[31]One concern we should have about using this theory is the restriction to intrinsic desire, since we haven't said that wondering must involve an intrinsic desire for knowledge, and indeed there seem to be many cases of instrumentally motivated wondering. However, note that Arpaly and Schroeder are taking 'intrinsic' to be very broad, covering, for instance, a normal person's desire for money (Arpaly and Schroeder 2014, p. 132). We can take this as a surprising substantive result that more desires are intrinsic than we might have thought, which presumably also extends to wanting to know, or we can take their theory to be an account of desire more broadly, including instrumental desire. Either way my application of their theory should go through.

positive reward signal.[32] To complete the argument for the WTK Theory, then, we need the premise that wondering Q constitutes the agent's knowing Q as a reward, or, in other words, disposes them such that representations of the obtaining of their knowing Q causes a positive reward signal.

This presents another delicate tangle of empirical and philosophical issues which I will not here attempt to sort out. I will say only that on the face of it, the required premise is supported by work in neuroscience and psychology.[33] For example, one common kind of task presents subjects, sometimes non-human animals, with an option to obtain information about the size of a future or even counterfactual non-informational reward, like food or money. Subjects are often curious, taking this option even at non-trivial cost. And the same mid-brain dopaminergic neural circuitry involved in reward seeking and signalling in general are also active in making such decisions about getting information and responding to their outcomes.[34] There are various open questions about the details, but it seems to be agreed that for these curious subjects—subjects wondering about something, I take it—attaining the relevant information is rewarding. If this is right, then on the reward theory of desire the directive representation to know Q will turn out to be a desire to know Q.

Chaining it all together: wondering Q has the function of guiding the mechanisms that use that representation to bring it about that the wonderer knows Q. By Millikanian teleosemantics, this implies

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[32]One complication I am ignoring here is that their theory distinguishes and allows for both appetitive desires and aversive desires. The former consists in the content's constituting a reward, the latter constituting a punishment. This raises the question of whether we should treat wonder not as a desire for knowledge, but rather as an aversion to ignorance. If their theory is right, we could distinguish these theories empirically, in which case I would take it to be an interesting and open question whether we should accept the WTK Theory or else a Want to Remove Ignorance Theory.

[33]For recent relevant overviews, see Kidd and Hayden (2015) and Bromberg-Martin and Monosov (2020).

[34]See Bromberg-Martin and Hikosaka (2009), Kobayashi and Hsu (2019), Charpentier, Bromberg-Marin, and Sharot (2018), Blanchard, Hayden, and Bromberg-Martin (2015), Wang and Hayden (2019), and Lau et al. (2020). For other kinds of experiments about curiosity with similar conclusions, see, e.g., Kang et al. (2009), Gruber, Gelman, and Ranganath (2014), and White et al. (2019).

that wondering is a directive representation with the content '[the agent] knows Q'. Such a representation makes knowing Q rewarding. So by Schroeder and Arpaly's reward theory of desire, this directive representation is a desire to know Q.

The assumptions relied on here—teleosemantics, the function of a wondering Q representation, the reward theory of desire, the interpretation of the neuroscience—can be plausibly resisted in various ways. And one can never rest easy with a commitment to a non-trivial analysis; it may always be just a two-page *Analysis* paper away from decisive refutation. Even so, when taken together, the initial evidence from judgements about simple cases (§1), the judgements about when wonder is or is not satisfied (§4), and now this speculative argument from teleosemantics and the reward theory of desire make the WTK Theory quite attractive, given that none of the objections levelled against it are persuasive (§§2–7). This concludes, for now, my case for the WTK Theory. I end with a brief advertisement of its consequences for epistemology.

9.   Norms of Wondering, Norms of Wanting

There are a few avenues that the foregoing case for the WTK Theory points to as interesting ones for epistemologists to explore. §4 and §6 raised some questions about suspension of judgment and its relation to decision, practical knowledge, and skill. §8 raises the possibility of a teleosemantics-based account of the importance of knowledge to our mental lives. But the WTK Theory is likely to have its most direct consequences for the theory of inquiry and its norms.

Inquiry seems to be a goal-directed activity with knowledge as its end (Kelp 2014, 2020; Friedman 2020). As such, it is plausibly governed by a means-end principle of instrumental rationality. How does wondering relate to this picture? One natural thought is that wondering Q gives one the end of knowing Q. It initiates inquiry (or at least should initiate inquiry), thereby subjecting one to inquiry's norms. A moment ago, there was no rational requirement on me that I google how many hours squirrels sleep per day, but now that something

got me wondering that question, I feel I must so google.[35] Another natural thought is that wondering itself is governed by an instrumental principle: if you wonder Q, and coming to know Q' is a necessary means for knowing Q, you must wonder Q' as well. If I wonder which of the guests is vegan, and coming to know whether Sandra is vegan is a necessary (partial) means to this end, I must wonder whether Sandra is vegan.

The WTK Theory may seem to give these natural ideas a solid foundation: to wonder is just to want and wanting gives us ends, subjecting both our actions and other wants to instrumental requirements. This would suggest that a large part of the normativity involved in inquiry, and thus arguably a large part of epistemic normativity, is just a special case of practical normativity.[36]

This would allow us to treat the practical and relevant epistemic issues together, giving us a wider evidence base to draw on and resulting in a more parsimonious total theory.[37] If wondering were a *sui generis* state, we would have to be more careful—perhaps it also has *sui generis* norms—and our theory less unified. If it is the sort of state that gives us ends, we would need an explanation of why it does so, in addition to the independently needed explanation of why wanting gives us ends.

This is not the right lesson to draw from the WTK Theory as I have developed it, however, although it is on the right track. I have argued that the WTK Theorist should identify wondering with a *some-things-considered* want (§3). The normative role of such wants differ in significant ways from all-things-considered wants. In particular, they do not give rise to means-ends requirements; they do not in

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[35]I'll save you the trouble: about 15 hours per day on average, apparently.

[36]Assuming instrumental principles are principles of practical normativity. This is widely assumed, but rejected by some (e.g. Setiya (2007)).

It is also worth noting that some philosophers will want to go further and try to derive *all* epistemic normativity from instrumental norms of inquiry, as Steglich-Petersen (forthcoming) proposes. I will here only propose partial unification, leaving norms governing the state of belief untouched.

[37]This would not be the kind of role for practical normativity that pragmatists like Rinard (2019) advocate, nor that of the pragmatic encroachers like Fantl and McGrath (2002). It doesn't say anything about practical reasons for belief, and it makes an unreduced appeal to knowledge without saying anything about whether practical stakes affect what it takes to know.

general give one ends. One can coherently some-things-considered want to play tennis but uncriticizably make no move to get one's racket, since one may all-things-considered not want to play. If you do not all-things-considered want to know, wondering when you will die does not impose any sort of requirement on you that you take a necessary means to finding out. Indeed, if you all-things-considered want not to know, plausibly you are rationally required to refrain from doing at least some of what it takes to find out.

Epistemologists interested in inquiry and its norms could respond to this by focusing on all-things-considered wants, ditching wonder as folk psychological notion not suited to serious normative theorizing. I grant that working out the role in inquiry of all-things-considered wanting to know is an important project, as the parallel is in practical philosophy, and that much work remains to be done on that front. But I think it would be a mistake to excise some-things-considered wants from our normative theories or to treat them as an afterthought.

Though I will not argue the point here, I think that our some-things-considered wants are more fundamental, in aggregate determining what we all-things-considered want. And though they may not be as directly connected to high-level normative statuses like oughts or rational requirements, I take them to be closely connected with other, more fundamental normative statuses, such as being good to some degree in some respect or having a reason in favor, which in aggregate determine oughts.[38]

If this is right, a unification of certain parts of the practical and the epistemic may still be in the offing. It will just need to involve multiple levels. A certain kind of Humean might say that since wondering is just a some-things-considered want for knowledge, it constitutes a reason for an agent to inquire. Combined with one's other wants (and facts about one's options and evidence about outcomes), this yields one's all-things-considered reasons to inquire in this or that way or not at all, as the case may be, and so too one's oughts. I, a certain kind of

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[38]This position is not non-committal, but it is compatible with a wide range of views both about the relations between some- and all-things-considered wants and the relation between these and various normative notions.

non-Humean, would prefer to say that since wondering *Q* is just a some-things-considered want for knowledge *Q*, it is fitting iff, because, and to the degree which it is good to know *Q*. Combined with the goodness and badness of various other states (and facts about one's options and evidence about outcomes), this yields one's all-things-considered reasons to inquire in this or that way or not at all, as the case may be. Others with different views about the relation between the relevant notions will prefer to put things differently.

We should theorize not only about the all-or-nothing ought-issuing norms that govern inquiring agents, but also about what underlies these norms. To put it in the value-based terms I prefer, we should ask: what is good to know? To what degree? What determines this? How do the values and disvalues of knowing combine and trade-off with each other and with non-epistemic values? Such questions are not new, of course, nor do I expect uncontroversial answers to appear soon. But I hope developing the WTK Theory can help us make some progress by offering a new way to connect these questions with recent work on norms of inquiry and to the question of what it is fitting to wonder.

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