Vectors of Epistemic Insecurity

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Abstract

Epistemologists have addressed a variety of modal epistemic standings, such as sensitivity, safety, risk, and epistemic virtue. These concepts mark out the ways that beliefs can fail to track the truth, articulate the conditions needed for knowledge, and indicate ways to become a better epistemic agent. However, it is our contention that current ways of carving up epistemic modality ignore the complexities that emerge when individuals are embedded within a community and listening to a variety of sources, some of whom are intentionally engaged in deception or bullshit. In this context we want our beliefs to be *secure*. In this paper we translate the epistemic modal standing of safety into a framework appropriate for social epistemology and argue for the importance of epistemic network-security and belief-security to be added to this framework. We discuss the virtues that are salient for promoting network-security and the vices that undermine it. In particular, we highlight monitoring, adjusting, and restructuring virtues and vices. Importantly, each of these vices can be other-regarding or self-regarding. For example, one tempting way of dealing with insecurity within a network is to completely cut oneself off from biased sources. However, we argue that this is a self-regarding restructuring *vice* because it closes oneself off from opportunities for epistemic growth. By contrast, an *other-regarding* restructuring vice would be to cut off others from hearing from sources of information that would make their network more secure.

Keywords: virtue epistemology, social epistemology, safety, security

1. Introduction

Virtue epistemologists have largely neglected the ways in which epistemic virtue functions in social epistemic environments of inter-connected information sharers. Testimonial exchanges between two people receive the bulk of the attention.[1] Moreover, only recently have epistemologists recognized that epistemic virtues, like moral virtues, can be *other-regarding* (Kawall 2002; Fricker 2007). The slow arrival of the social within virtue epistemology is likely due to the fact that virtue is mainly understood as localized within an individual (Battaly 2008; Greco 2010; Montmarquet 1992; Sosa 2007; Zagzebski 1996).[2]

In this paper, we highlight the ways in which epistemic virtue and vice depend on the larger structure of one's epistemic community (Alfano and Skorburg 2017a, 2017b). In particular, we address the way that modal epistemic standings and the virtues and vices that accompany these standings are *networked*.

We first consider the familiar modal epistemic standing of *safety,* which obtains when the epistemic agent could not easily have believed falsely (Pritchard 2007). We argue that safety in a social network context is best understood as vector-relativized. One's belief is safe only if, *holding constant the structure of one's network of informants* (and one's informants, and one's informants' informants…), there is no close possible world in which one's belief turns out false. We then introduce a complementary modal epistemic standings, *belief-security and network-security,* to cover a related phenomenon. One's belief is secure only if, given small perturbations in the structure of one's network of informants (and one's informants, and one's informants' informants…), there is no close possible world in which one's belief turns out false. One's network is secure only if, given one's network of informants, and given small perturbations in the structure of one's network of informants, one does not depend only on a small number of non-independent sources for information. Given this framework, we discuss the virtues and vices that are operative within the social epistemic context and how these dispositions navigate the tradeoffs between security and safety narrowly construed. Understanding epistemic virtue and vice as depending on the larger structure of one's epistemic community enables us to capture the unique qualities of social epistemic communities and the epistemic modal standings operative within them.

2. Toward vector-relativized modal epistemic standings

Nozick (1981) argued that a modal requirement on knowledge is necessary. Beliefs are epistemically better to the extent that they are *sensitive*. A belief is sensitive iff *S* knows *p* via a method *M* only if, were *p* false, *S* would not believe *p* via *M*. Nozick's notion of sensitivity has since been abandoned for an alternative modal standing: *safety*. Safety seeks to capture Nozick's intuition that knowledge has a modal requirement without the purported drawbacks of skepticism, abandoning closure, and failing to allow for the possibility of knowledge about necessary truths (Pritchard 2009; Sosa 1999a 1999b; Williamson 2000). Safety continues to play

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[1] Some exceptions include discussions about what it means for *groups* to testify (Tollefsen 2007; Lackey 2015, 2018) and discussions about which network structures are conducive to sharing knowledge within idealized communities of scientific researchers (Holman and Bruner 2015; Rosenstock et al. 2016; Zollman 2007).

[2] For a socialized alternative, see Alfano & Skorburg (2017b) and Skorburg (2018).

a central role in anti-luck epistemology. Recently, Pritchard (2016) proposed that a related concept, *epistemic risk*, is more fundamental than safety.

We aren't interested here in providing a set of necessary and sufficient conditions for knowledge. Instead, we are interested in a range of modal standings that — regardless of whether they are constitutive of knowledge — are epistemically (dis)valuable in social epistemic networks. The central discussions surrounding these epistemic modal concepts focus almost exclusively on cases of testimonial knowledge between two people or the knowledge one person gains from her immediate environment. Moreover, discussions of testimony almost exclusively ignore the complexities that emerge when individuals are embedded within a structured community, and how this complexity might impact modal epistemic standings. In this section we argue that understanding safety as *vector*-relativized brings epistemic modal standings in line with a truly social epistemology.

Generally speaking, a belief is safe when it could not have easily been false. While there are many different formulations of safety (Pritchard 2009; Sosa 1999a 1999b; Williamson 2000), the basic idea is that knowledge is not compatible with a certain type of luck. In cases where luck is one of the main reasons why a person's belief is true, it seems that the person does not know. Much ink has been spilled explicating the conditions under which a belief is safe (Kelp 2009; Rabinowitz 2011). A central part of the nuance comes in explicating what it means for a possible world to be *close* and what degree of closeness undermines knowledge. Leaving the discussion of close possible worlds aside, we turn to related issue that many agree on: safety is *basis-relative*.

In judging whether one's belief is safe, we need to hold fixed the basis on which or method by which the belief was formed (Nozick 1981, p. 179). For example, if Alberto formed a true belief based on Jane's testimony, then we should consider the close possible worlds where that belief, *based on Jane's testimony*, is false. Even if it is (closely) possible that Alberto could believe the same proposition by reading it in the newspaper, or by consulting a magic eightball, these facts do not impinge on the question whether Alberto's belief — based on Jane's testimony — is safe. This results in the following definition of safety:

> **Basis-relative safety:**
> S believes that p safely on basis B iff there is no close possible world in which S falsely believes p on B.

Cases of testimonial belief raise interesting questions concerning whether the testifier's belief must be safe in order for the receiver's belief to be safe. Goldberg (2005; see also 2009) argues that one can in fact have a safe belief from unsafe testimony. He asks us to consider the following case:

> **Milk Carton**: Mary observes a small carton of milk in Frank's fridge at 7:40am. She tells Sonny (who always has cereal with milk for breakfast) that there is milk in the fridge. Sonny forms the true belief based on Mary's testimony that there is milk in the fridge. However, unbeknownst to both of them, this is just a matter of luck. On every other morning, except this one, Frank at 7:30 empties the milk carton and places the empty carton back in the fridge. However, since Frank is in the kitchen with both Mary and Sonny, in all possible worlds where the carton was empty, Frank would have interjected

> and corrected Mary's testimony. Thus, there is no possible world in which Sonny's belief is false.

The idea is that even though *Mary's* testimony is unsafe, Sonny still forms a safe belief based on her testimony because there is no close possible world in which his belief is false. Debate has since followed about whether Goldberg's intuition about unsafe testimony is right, and whether Sonny's belief is actually a belief *based on testimony* (Lackey 2008; Pelling 2013). We are not here interested in joining that debate. Instead, we want to highlight that this case serves to broaden the scope of how we should think of modal epistemic standings such as safety. In particular, **milk carton** shows that safety is *vector-relative*.[3] It is our contention that Sonny seems to have a safe belief because he is not in an epistemic dyad, where information is shared from exactly one person to exactly one other person. Instead, Sonny is in an epistemic network with two sources, one actual (Mary) and the other merely potential (Frank). The presence of both these sources entails that the belief Sonny has about the milk in the fridge will be true in all close possible worlds. Thus, once we move beyond epistemic dyads to a truly social epistemology it is evident that the structure of one's epistemic network greatly impacts whether one has knowledge.

We therefore propose the following account of safety in a social epistemic network:

> **Vector-relative safety**:
> S believes that p safely within epistemic network N iff there is no close possible world in which S falsely believes that p in N.

Vector-relative safety can also explain why someone's belief is unsafe. Consider another case introduced by Pritchard (2010).

> **House Fire:** Imagine that Campbell comes home to find his house on fire. The fire department is already on the scene. Campbell sees a number of people dressed in fire protective gear. He approaches one of these people and inquires about the cause of the house fire. He receives testimony from the fire official that the fire was caused by faulty wiring. Campbell then forms the true belief that the fire was caused by faulty wiring. However, unbeknownst to Campbell, the other people he saw dressed in fire gear were not fire fighters but people on their way to a firefighter themed costume party. Campbell's belief that the fire was caused by faulty writing could easily have been false, because in close possible worlds Campbell did not ask a real fire official but an unreliable party goer.

House fire is a classic of case of *environmental* luck. Campbell finds himself in a bad epistemic environment, and as such does not have a safe belief. Notice that this case is also vector-relative.

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[3] Goldberg (2005) argues that **milk carton** suggests that there are local invariances in one's environment that should be held fixed in determining whether someone has a safe belief. Our notion of vector-relative safety is in the spirit of Goldberg's account, but it is more specifically tied to one's social epistemic network.

Campbell's belief is unsafe because he finds himself in an epistemic network of mostly party-goers disposed to give false or unreliable testimony.

In the classic fake barn country case, the bad epistemic environment is not specifically a bad *social* epistemic environment, so the vector-relative aspect of safety does not arise. However, in testimonial cases it is useful to think of epistemic modal standings as vector-relative to better capture and diagnose epistemic success and failure. In this regard, we are not suggesting a replacement for basis-relative safety. We are suggesting that in social epistemic cases — one of the primary ways we gain information and knowledge — the basis of one's belief is essentially dependent on the structure of one's epistemic network. Furthermore, as we argue in section 4, understanding safety as vector-relative uncovers steps agents can take to place themselves in a better epistemic position and cultivate the virtues needed (and avoid related vices) in a truly interconnected social epistemic network.

3. Epistemic Security

Vector-relativized safety is a modal standing that captures someone's epistemic position given the current structure of her epistemic network. We hold the network structure fixed when considering counterfactual possibilities of false belief. We argued above that thinking of safety in this way better captures epistemic success and failure in a truly social testimonial network.

Once we accept the usefulness of an epistemic modal standing that keeps the network structure fixed, it's natural to think about another modal epistemic standing that considers close possible worlds of (slightly) different network structures. Call this epistemic *security*. Unlike safety, which tracks whether one is currently in a good social-epistemic environment, epistemic security tracks how robust this environment is to changes. This is especially important in cases in which there are members of the social epistemic community intentionally working to deceive, mislead, and manipulate. There are two notions of epistemic security: the security of one's *network*, and the security of one's *belief*.

> **Belief-security**:
> S believes that p securely within epistemic network N iff there is no close possible world in which S falsely believes that p in N`, where N` is a network that can be generated by adding or deleting a small number of testimonial links in N.
>
> **Network-security:**
> S is in a secure epistemic network N iff S's epistemic well-being in N does not depend on a small number of independent sources and there is no close possible world in which S's epistemic well-being depends on a small number of sources in N`, where N` is a network that can be generated by adding or deleting a small number of testimonial links in N.

First consider belief-security. While all epistemically secure beliefs are safe, not all safe beliefs are secure. Mixed cases involving safety but not security occur when just a few small changes to the geometry of the testimonial network would result in the agent no longer truly believing the true proposition in question. For example, consider a case in which S receives testimony about p from three other agents: A, B, and C. In the actual world, A and B truly testify that p, whereas C falsely testifies that ~p. Now consider a counterfactual scenario in which C testifies to both A and B that ~p before they have a chance to speak to S. In light of C's testimony, both A and B

abandon their belief in p and so are not inclined to testify that p to S. In this nearby possible world, the only testimony that S receives indicates that ~p. Thus, while her belief is safe (i.e., true in close possible worlds holding fixed the network structure), it is not secure.

On the other hand, network-security considers network structure only. We abstract away from the exact testimony and beliefs of the agents in question. This means that occupying a more secure *network* may increase the likelihood of true beliefs in the future, but it may not. If agents happen to be clued in to reliable and trustworthy sources — even if the network is insecure — they will still fare well. However, if an agent is in a network with several independent sources, but none of them are trustworthy, then she will not fare well, despite the network-security.

Just as safety is a modal epistemic standing that captures how luck is incompatible with knowledge, epistemic security captures the way that the structure of one's network, and the beliefs they form in that network, should be immune to luck and resilient to bad actors. It shouldn't just be a matter of happenstance that someone gains true beliefs given the network structure that she occupies. The epistemic value of belief-security should be intuitive. Belief-security concerns the likelihood of someone maintaining a true belief in the face of network changes. However, the value of an epistemically secure network, may strike some as unintuitive. Thus, in this paper we mostly develop a case for network-security.

An epistemically secure network is one where the epistemic wellbeing of an agent isn't dependent on the epistemic goodwill of one or just a few other agents. It is our contention that epistemic network-security is worth aiming for not only if it increases the likelihood of true beliefs, but also because secure networks promote epistemic growth and epistemic autonomy. To see why, consider a non-epistemic case. Kant in the *Metaphysics of Morals* (MM) argues that political rights are necessary for a person's freedom and autonomy to be respected. Without these rights, the well-being of someone is dependent on the good-will of others. Korsgaard (2012, 2) puts the point nicely:

> [Kant] argued that without the institution of enforceable legal rights, our relationships with each other must be characterized by the unilateral domination of some individuals over others. The problem is not, or not merely, that the strong are *likely* to tyrannize over the weak. Even if the strong were scrupulous about not interfering with the actions or the possessions of the weak, still, without rights, the weak would be able to act on their own judgment and retain their own possessions only on the sufferance of the strong (MM 6:312). Since her innate right to freedom is violated when one person is dependent on some other person's good will, Kant thinks it is a duty, and not just a convenience, for human beings to live in a political state in which every person's rights are enforced and upheld (MM 6:307–8).

In the case where the leader of the society has goodwill, rights will not make a practical difference to those in the society. However, their wellbeing is still less *secure*. In the close possible worlds where the leader is replaced, or the strong have a change of heart (for the worse), then the weak have no protections. So even if political security does not make a practical difference in day-to-day lives, there is still value here. It is a matter of luck, or happenstance, that each person's wellbeing is respected.

We find analogous results in the epistemic case. If someone is in an insecure testimonial network but the source he relies on is reliable and accurate, the lack of security is epistemically

problematic. The agent lacks a clear sense of epistemic autonomy, with little opportunity to grow epistemically. Moreover, in close possible worlds where the source is not reliable or has a change of heart, the hearer of testimony loses whatever good epistemic position he had. Figure 1a shows such an insecure testimonial network (from the perspective of any of the outer nodes). In this star-network the center node (the source node) is the only source the outer nodes (receivers of testimony) are drawing on. Each outer node is dependent on the center to supply accurate and truthful information (Alfano 2016; Freeman 1978). Indeed, star-networks are associated with a number of problematic and harmful practices. Sexual predators and their targets often form a star-network, with the predator at the center and the victims on the points of the star. This keeps the victims from effectively communicating with one another, and coordinating or cooperating against the predator (Fire, Katz, Elovici, 2012). Star-networks are also associated with financial fraud (Šubelj, Furlan, Bajec, 2011), academic fraud (Callaway, 2011), and terrorist activities (Reid et al., 2005; Krebs, 2002).

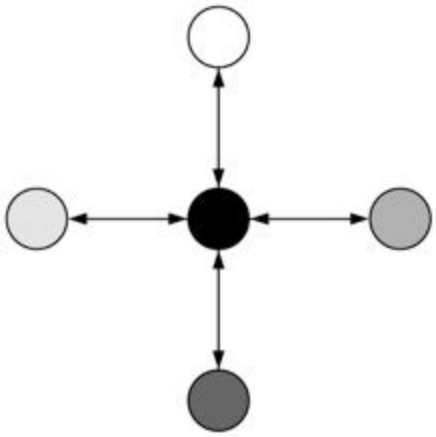

Figure 1a
Star-Network

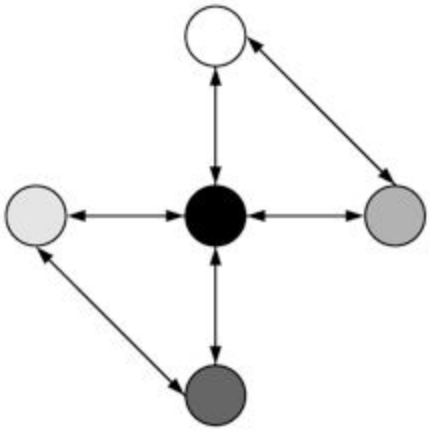

Figure 1b
More Secure Network

Making small adjustments to the network where the outer nodes themselves become directly connected (Figure 1b), makes the center node's network more secure. The outer nodes can confer with each other on the merits of the center node's testimony. Epistemic well being is no longer dependent solely on one other person.

In more connected networks, the structures become more complicated, and it may take some effort for an agent to be aware of the level of network-security she has. Figure 2 shows an example of an insecure network that at first may seem secure (Alfano et. al 2018). Imagine that Sana (represented by the white node) finds herself in an epistemic network consisting of four different people to whom she is directly connected. When she seeks information about some topic, she enters a conversation with each person separately. She finds that *every time* the same three people (represented by black nodes) always give the same answer. Sometimes their answer is the same as that provided by the fourth person (represented by the grey node), sometimes it isn't. According to Sana's immediate perspective, it seems as though she is in a

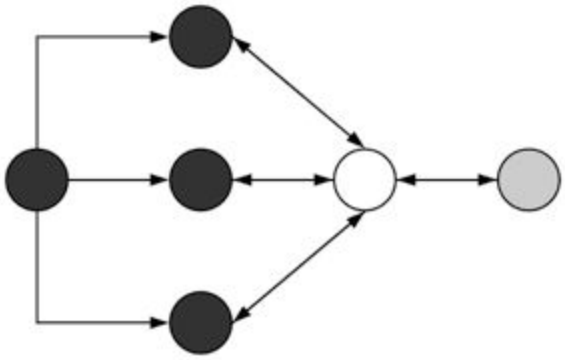

Figure 2
Insecure Network

secure network with four independent sources that help her to converge on the truth. However, when we zoom out we see that the three people who always agree are actually just passing on the information from one single source. So in reality Sana is drawing from only two sources, not four. Her position is less secure than she thought. Three of the people she talks with are not genuine sources of information, but mere *conduits*. They are simply passing along information. Only when Sana monitors the structure of her network with the goal of increasing her network-security does it become transparent that she should seek out more independent sources to guard against misleading and false information (or just overly-amplified information).[4]

Cases like the one modeled by Figure 2 seem to be increasingly common in today's social media environment. Large platforms such as Facebook and Twitter specialize in amplifying viral content, which makes it seem more prevalent (and thus more likely to be true) than it really is. Moreover, organized groups of trolls (e.g., on 4chan and 8chan), advertising firms, and political consultancies make efforts to hijack the amplification process and spread their preferred messages. To do so, they manipulate the structure of online testimonial networks. This process is essentially one of undermining network-security for the sake of some other motive (the lulz, profit, or desired political outcomes, respectively). Only when we have a clear grasp of what network-security is and why it is valuable does this phenomenon make sense.

Taking a network perspective on how we access information from a community of information sharers, we see that there are more than two possible epistemic roles in testimonial exchanges. There are receivers (those who listen to information), sources (those who are the primary sources of information), and conduits (those who pass on information from sources) (Sullivan et al. forthcoming).[5] The line between a conduit and a source is not always clear cut.

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[4] See Kelly (2010) for a related discussion of independence. Kelly only considers cases in which someone is prompted to *revise* a belief based on disagreement with multiple (in)dependent testifiers. The more fundamental question that we address here is what a desirable testimonial network looks like in the first place.

[5] A further interesting question is whether a group or network of individuals could itself count as a source. For example, when one reads *The New York Times*, one could treat the individual journalist whose byline appears with the article as the source of one's knowledge. Alternatively, one could treat the *Times* itself as one's source. We suspect that most groups are not sufficiently

Someone who passes along information he heard from another source can be more or less reflective before passing the information along. Someone who brings their own background knowledge to bear on the information and engages in an independent check before sharing more closely resembles a source than a conduit. For the sake of this paper, we treat conduits as simply passing along information in a minimally reflective way, such that the conduit could reasonably "pass the buck" to the original source.[6] We expect that someone who brings their own relevant background knowledge to bear on an issue, or who carries out an independent check, could not reasonably pass the buck. Importantly, tracking network-security requires monitoring the structure of one's network as well as the epistemic roles (receiver, conduit, source) that individuals in the network play. This allows agents to restructure of their networks, making them more resilient. It also enables them to maintain intellectual autonomy, and not to depend overmuch on the epistemic goodwill of others.

That said, it's worth addressing an important disanalogy between Kant's political case and the epistemic case. There is no authority upholding "epistemic rights" in the epistemic case.[7] So in the end we are all dependent on the larger epistemic community. This is made salient in Pritchard's **house fire** case. Campbell is in a relatively secure network given the number of sources at his disposal, but it is still the case that many of these sources, if they are disposed to mislead, could prohibit Campbell from gaining knowledge. So while the structure of the network qua structure is secure, there is still a lack of safety and belief-security. This highlights that network-security is just one of several features that need attending to in social epistemic networks. It also suggests that there are trade-offs between security and safety. Thus, part of acting virtuously in a social network is navigating these tradeoffs in a way that does not lead to vicious epistemic behavior. In the next section we consider the virtues and vices involved in negotiating the tradeoffs within insecure epistemic environments and the tradeoffs between security and safety.

4. Virtue and Vice in Social Epistemic Networks

Several epistemic virtues and vices are relevant in social epistemic environments. Many of these virtues are already widely discussed, such as openmindedness (Riggs 2010). However, if what we have been saying about social epistemic communities is on the right track, maintaining knowledge in a social epistemic environment requires distinct considerations.[8] We want to draw attention to three classes of virtues that only arise in social epistemic networks: *monitoring*, *adjusting*, and *restructuring*. To our knowledge, these dispositions have been almost entirely

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organized and structured to count as epistemic agents with the power to testify in their own right. However, this does not preclude certain groups from counting as epistemic agents and hence as sources. For more on these ideas, see Tollefsen (2007) and Fricker (2012).

[6] For a discussion about buck passing and testimony see Baker and Clark (2018).

[7] There are laws against fraud, false advertising, and other types of crimes that have an epistemic dimension. However, since free speech is a cornerstone of democracy, the scope of epistemic rights recognized by the state might be more limited in scope compared to political rights. For an account of epistemic rights see Watson (2018).

[8] One might wonder whether these virtues are necessary conditions for one's true testimonial beliefs counting as knowledge. We are agnostic on that question here. At the very least, these dispositions are epistemically valuable, even if they are not necessary or definitional.

neglected by virtue epistemologists, who tend to favor a very individualistic approach. As we will see below, all three types of dispositions have similar structures to more traditional epistemic virtues. They involve sub-dispositions related to attention, motivation, cognition, and so on. In addition, as we shall argue, they are scaffolded on one another. One can only embody an effective adjusting or restructuring virtue if one is sufficiently adept at monitoring. In short, monitoring makes one alert to imperfections in the structure of one's epistemic network, and those imperfections can be addressed either by leaving the structure intact while modulating one's trust or credence in various sources, or by altering the structure itself. In addition, given that these virtues are operative in a social epistemic environment, they may be both self-regarding and other-regarding. Moreover, vices, such as dogmatism, in the social epistemic context are manifested through vicious monitoring, adjusting, and restructuring.

4.1 Monitoring

In order to benefit from the knowledge embodied in one's social network, one should monitor and understand the structure of that network. This applies to both safe and secure belief. In **milk carton**, Sonny's belief is safe because of the structure of his network. Sonny would do well to monitor this structure so he can be attuned to any actions he could take to improve his epistemic position, and whether he should believe the testimony of Mary or seek further testimony. It is only through monitoring this structure that these considerations come to the fore.

While monitoring the structure of the network important, one must also monitor the epistemic roles and track-records of those in the network. Do my sources have a reliable track-record, or do they often provide false or misleading information? Are my sources independent, or are they conduits simply amplifying the messages of others? In the former case, I may be able to benefit from the wisdom of crowds, as the Condorcet Jury Theorem and related proofs indicate (List 2001; Masterton et al. 2016; Sullivan et al. forthcoming). In the latter, I may not. Even though monitoring the epistemic roles and track-records of others goes beyond the structure of the network, it is only through contextualizing these sources within a network structure that I am able to shape current and future epistemic behavior.

That said, the way modal standings like safety help shape *future* behavior is not always obvious. Gardiner (2017), for example, criticizes current conceptions of safety because do not allow agents to actively select for safe belief. According to Gardiner, since safety is an external condition on knowledge and only concerned with counterfactual properties of a specific belief, it does not affect future beliefs. Furthermore, since safety concerns only nearby possible worlds, selecting for safe belief in the actual world is not possible. Instead, Gardiner argues, safety simply tracks whether someone currently is in good epistemic environment, without guiding future behavior. However, by understanding safety (and security) as vector-relative these worries fall away. Monitoring, when done virtuously, is explicitly attuned to locating epistemic opportunities and threats in one's network. Monitoring requires seeing the structure of one's network as signaling possible network improvements and signaling how to weigh differing testimony both in the actual world and nearby counterfactuals. Considering epistemic sources apart from the network context, and considering whether one's belief is safe apart from network context, leaves one vulnerable to epistemically vicious dispositions and habits of behavior, such as dogmatism and closed-mindedness. For example, without monitoring the structure of my network, I may be in an epistemic echo-chamber that, while appearing epistemically diverse, actually cuts me off from potential knowledge today and tomorrow. Thus, monitoring virtues

concern the way that agents actively keep track of their epistemic position in various domains and contexts, and why keeping track of this position is epistemically beneficial.

Monitoring virtues can also be other-regarding. I can benefit others by recommending sources to them, or telling them to stop listening to certain sources to increase their safety and security. But I can only do this if I monitor the structure of their social networks, the track-record of these sources, and the epistemic roles of those in their network. Moreover, monitoring can be done with epistemically malevolent or benevolent motivations; one can monitor with the aim of finding ways to improve another person's epistemic position or to undermine it.

Consider a case of malevolent monitoring. One of Baehr's (2010) examples of personal epistemic malevolence seems especially relevant. Baehr asks us to consider how Frederick Douglass was treated with epistemic malevolence by his owners. The patriarch of the house, Tom, upon discovering his wife Sofia teaching Douglass how to read, actively worked to sever their ties. Tom was *monitoring* the structure of Douglass's epistemic network with epistemically malevolent motivations. He wanted to undermine Douglass's epistemic well-being. This was only possible through vicious monitoring.

Vicious monitoring can also be epistemically negligent, instead of malevolent. Online social media platforms, such as Facebook and Twitter, currently embody this type of vicious monitoring. Both platforms actively monitor the epistemic network of each user. However, their monitoring is not done to increase the epistemic well-being of the users; instead monitoring is guided solely by the profit motive. Concern for epistemic values is absent. Moreover, the monitoring of these platforms is arguably done in a vicious way, as seen by the privacy violations associated with the Cambridge Analytical scandal (Timberg et a. 2018).

Monitor in a virtuous way with virtuous aims takes effort. It involves weighing different values, not just maximizing true and minimizing false beliefs. Values of privacy, epistemic autonomy, in addition truth, are especially salient in this context.

4.2 Adjusting

One reason for monitoring one's network is to be able to know how to calibrate and adjust the weight one should give to sources and pieces of information spread throughout the network. Every real social epistemic network is imperfect, at least to some extent. If I manage to monitor the structure of my own network sufficiently well, I may be able to adjust my credences to account for its imperfections. The monitoring virtue is thus conceptually prior to the adjusting virtue. And the two are distinct. In principle, I could monitor the structure of my testimonial network adequately without being disposed to take into account the imperfections I identify when updating my beliefs. Likewise, I could monitor the epistemic track-records of my sources adequately without being disposed to distrust those who have proven themselves unreliable. Thus, adjusting virtues govern how someone should utilize the knowledge she gained from monitoring network structure, sources' track-records, and the epistemic roles of the agents in her network. For example, if someone is in a network structured in a way similar to Fig. 2, she should not ascribe more weight to the information coming from the conduits just because the information is repeated by more people. Instead, she should consider the reliability of *their* source node (the black node on the far left). Information distributed in a secure network should be weighted differently compared to information distributed in an insecure network. Thus, as with monitoring virtues, it is the structure of the network that gives shape to adjusting virtues. It is not possible to virtuously weigh the testimony of someone within a social network without

considering the structure of the network. Failure to do so will preclude knowing whether someone is a conduit or a source, which in turn leads to failure in correctly assessing whether one's belief is safe or secure.

Adjusting virtues can also be other-regarding. I may be able to benefit others by suggesting that they put more or less trust in various sources located in their social epistemic network. Contrariwise, I may be able to harm them epistemically by making opposite suggestions. The ability to do so depends on other-regarding monitoring dispositions, but exercising that ability (ir)responsibly is its own epistemic virtue or vice. Failing to adjust one's beliefs (and not suggesting adjustments to others) based on the structure of the network risks not only developing adjusting vices, but again risks developing more deep-seated vices like dogmatism and close-mindedness. In a social epistemic environment, networked vices are intimately connected to and give rise to other vices.

4.3 Restructuring

While all real social epistemic networks are imperfect, sometimes they are so flawed that they need to be modified. Networks can (to some extent) be *rewired*. This could involve seeking out new sources, no longer listening to sources one had previously trusted, or effecting more distal changes in the structure of the network. Doing this well depends on sufficiently successful monitoring, recognition that attempts to adjust credences are not up to the task, and the motivation and capacity to identify efficient and effective changes that one has the power to enact. The latter dispositions are components of *restructuring* self-regarding social epistemic virtues. And as with the other dispositions in this taxonomy, one could embody correlative vices instead of virtues. One could, for instance, be disposed to cut oneself off from reliable testifiers, plug oneself into networks that amplify fake news and conspiracy theories, and so on.

How exactly do and should we navigate the process of restructuring our own and others' testimonial networks? Levy (2017) argues that you should cut yourself off completely from sources of fake, misleading, and unreliable news. He cites a wealth of psychological studies that suggest that humans are easily persuaded by false information, even if they know full well that the information is false. Humans have cognitive biases such that we tend to misremember sources of information and believe fictions (e.g., Marsh et al. 2016; Prentice et al. 1997; Wheeler et al. 1999). Levy argues that even being exposed to false information leaves us vulnerable to acquiring false beliefs. Through the lens of our framework, Levy values safety and belief-security over network-security: we should limit the number of sources to only those that reliably provide good information. While this might seem like a restructuring virtue, we want to suggest that, for several reasons, such behavior can actually manifest as a restructuring *vice*.

First, by cutting myself off from an untrustworthy source, I end up more dependent on the remaining sources I do trust. Thus, by making myself less vulnerable against that untrustworthy source, my network becomes less secure, and I become more vulnerable to my remaining sources. This can become a problem. Sources can change slowly over time with respect to how reliable, independent, and epistemically well-intentioned they are. As a real world example, small local media companies in the United States are undergoing a takeover by a single company, Sinclair Media, that has a clear ideological agenda (Stelter 2018). Safeguarding network-security by keeping many different types of sources in one's network can better guard against this type of epistemic takeover. Furthermore, it provides agents with the opportunity for epistemic growth, despite the vulnerability to false information. Engaging even with propaganda

can serve to develop better epistemic skills, if the propaganda serves as a negative epistemic exemplar. It is possible to learn what to avoid and how to spot similar but different bad epistemic behavior in future instances from bad epistemic examples (Alfano 2013; Sullivan and Alfano 2019).

Second, limiting any engagement with unreliable sources lessens my potential to develop other-regarding restructuring virtues. Other-regarding restructuring virtues involve being disposed to help others rewire their trust (and distrust) networks so that they are epistemically better off and less vulnerable. However, if I am overly concerned with limiting my own exposure to false and unreliable information, then I will be unable to advise others how to better their network. In order to help others, I need to monitor their networks. Part of this monitoring will include exposing myself to false and misleading information. This is not to say there is *never* a source that you should sever ties with. Instead, we contend that the solution to false and intentionally misleading news is not a divide and conquer strategy. One should take a more encompassing view of what it means to do well epistemically. A single-minded concern for the truth of one's own beliefs, neglecting network-security, can cut one off from other epistemic desiderata, and from developing important other-regarding epistemic virtues. What Levy and others who advocate cutting oneself off from fake news and related phenomena neglect is that there is a sort of collective action problem here: single-mindedly focusing on the verisimilitude of my own beliefs may lead me to neglect the epistemic well-being of my community.

Lastly, it is imperative to discuss other-regarding restructuring vices. Getting other people to stop trusting reliable sources and to plug themselves into amplifiers of fake news and conspiracy theories is a restructuring epistemic vice. As discussed alongside Fig. 1a, this practice is often employed by sexual harassers and abusers, perpetrators of financial and academic fraud, and other epistemically malign actors. Such malicious actors seek to make others epistemically dependent on *them*. This can be done with malicious intentions, or it may not. Cases with malicious intentions are easy to see. In the case of Fredrick Douglass, Tom actively restructured Douglass's epistemic network for the worse. Tom limited the potential for Douglass's epistemic growth and intellectual autonomy by severing ties between Douglass and his epistemic informants.

Even someone who has well-intentioned motivations *and* has access the truth, but reduces others' network-security, making others epistemically dependent on them (even for their own good), displays vicious behavior. Plato's philosopher king is a perfect example. The philosopher king keeps the public cut off from art and fiction, tells the public untruths, but all for the sake of their own epistemic well-being. However, despite Plato's enticing epistemic arguments, we contend that this too is epistemically vicious. It reduces network-security. It makes people less intellectually autonomous and less able to enjoy epistemic growth.

5 Conclusion

In this paper we argued that social epistemology needs to expand its toolkit to include epistemic modal standings and epistemic virtues and vices as networked concepts. The structure of one's epistemic network gives shape to related virtue and the nature of epistemic modal standings. Conceptualizing epistemic modal standings and virtue as inherently networked allows us to see that safe belief is relative to one's surrounding network, and that network-security (and belief-security) is just as important. Not only should our beliefs be safe in the current network, but also secure in nearby possible networks.

We also introduced three classes of virtues (and correlative vices) that allow us to navigate the social epistemic realm: monitoring, adjusting, and restructuring. These virtues can be both self-regarding and other-regarding. They govern the tradeoffs between safety and belief-security, and network-security and are manifested in different ways depending on the structure of one's epistemic network. Much more needs to be done to develop and find the correct balance between safety, belief-security, and network-security and between self-regarding and other-regarding considerations. What we have done here is take the first step in articulating a framework within which to expand virtue epistemology and to make social epistemology to truly social.

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