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Trust in a Social and Digital World [1]

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The average Australian spends almost 10 hours a week on social media; a majority report that checking Facebook is one of the first things they do in the morning (Sensis 2017). Recent revelations about fake news and extremist sentiments spread via social media are thus deeply troubling. Information on social media platforms tends to be amplified and spread by friends, family, and other people we trust. Even the most skeptical among us might therefore be drawn in by falsehoods from familiar voices.

Some are more socially epistemically virtuous (or vicious) than others. Anecdotally, we all seem to know an uncle or grandfather who uses social media to amplify fake news, conspiracy theories, and other epistemically problematic viral content. This impression was born out by a recent study, which found that there are significant individual differences in the disposition to share fake news (Guess et al. 2019). In particular, the authors found that conservative and older social media users were significantly more likely to share fake news associated with the 2016 American presidential election. Remarkably, users over the age of 65 shared *seven times* as much fake news as younger users. This demonstrates that there are meaningful individual differences in people's social epistemic dispositions. In his contribution to this conversation, Marco Meyer shows that a simple psychometric scale can be used to predict acceptance of both fake news and conspiracy theories.

The dissemination of fake news on Facebook and other platforms is a modern manifestation of a much older problem. We can only learn so much about the world on our own. For the rest, we must depend on others to supply true, reliable, and relevant information. Reliance on an epistemic network is not merely unavoidable; in the best cases, it is empowering, greatly increasing the scope of our knowledge. But while there are benefits to distributing one's cognitive load onto an epistemic network, doing so is fraught with dangers. Other agents sometimes have reason to mislead, and are themselves sometimes misled. In her contribution to this conversation, Emily Sullivan argues that, as messages propagate through networks, the communicative intention of the original speaker can be lost to such an extent that what started as one type of speech act (e.g., a joke) might be reasonably received as another (e.g., a piece of testimony). If this is on the right track, then our social networks have the potential to transform jokes into lies.

Yet assessing the friendliness or hostility of the epistemic environment is neither an easy nor a straightforward task (Alfano and Skorburg 2017a; Isserow and Klein 2017). It requires establishing which epistemic virtues are needed by agents who navigate epistemic networks such as the Internet. It also requires developing a philosophical model of secure trust that takes such networks into account. Finally, it requires investigating the structure and information flows of contemporary online communities in order to show how the epistemic capacities of agents embedded in those networks might shape and be shaped by features of those networks.

Given that the subfield of social epistemology is several decades old (Coady 1995), contemporary epistemologists ought to be well-placed to respond to these new challenges.

In this conversation at the *Social Epistemology Review and Reply Collective*, we aim to kickstart a discussion of exactly these topics.

The New Normal

People rely on epistemic networks of peers, authorities, and strangers to convey the truth about a wide variety of topics to which they do not have direct access. The most prominent contemporary epistemic network is the Internet. Compared to traditional epistemic networks, the Internet has catalyzed both quantitative and qualitative shifts in the information ecology along multiple dimensions:

Volume: we have access to more information.
Velocity: we have access to information more quickly and fluently.
Veracity: we have access to more accurate information.
Variety: we have access to more diverse information sources.
Voice: we have more power to make ourselves and others heard.

In our quest to believe the truth and avoid error (James 1896/1979; Morton 2013), these are welcome developments. In the early days of the Internet, it seemed to some that we were on our way to an epistemic utopia in which we spend less time and effort on basic cognitive tasks, freeing up attention for complex and collaborative inquiry. In this utopia, the vices arising from cognitive miserliness (Fiske and Taylor 1984) would be rebaptized as the virtues of thrift.

The result has been decidedly more mixed. The Internet has made available an unprecedented number of accurate sources. However, they must be sifted from the spammers, trolls, practical jokers, conspiracy theorists, counterintelligence sock-puppets, liars, and ordinary uninformed and misinformed citizens who also proliferate online. Furthermore, information now comes at us so quickly that we may neglect to exercise critical scrutiny. The promise of diverse information sources is easily and inadvertently quashed as we construct "filter bubbles" and "echo chambers" around ourselves (Pariser 2011; Lynch 2016; Sunstein 2017; Nguyen 2018; Sullivan et al. 2019) and choose experts who confirm our pre-existing biases (Goldman 2001). The influence of targeted political marketing by Cambridge Analytica on recent elections in the UK, the USA, and Kenya demonstrates the urgency of this problem (Bright 2017).

Thus, while each of the shifts above may seem individually good, they interact in problematic ways. The increase in volume and variety of information brought about by the Internet makes it more difficult to find veridical sources, especially given increased velocity and voice. As a society, we are still struggling with these changes. These problems can be addressed by asking two related question:

1. Given the topology of the epistemic networks we find ourselves in, what sorts of epistemic dispositions ought we to have?

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2. Given our actual epistemic dispositions, which network structures are more likely to produce epistemic goods?

The answer to the first question might emphasize virtues such as skepticism or open-mindedness. The answer to the second would categorize different types of network organization given our natural epistemic dispositions (Zollman 2013; Pallavicini et al. 2018), suggesting which sorts of communities might be at special risk.

Contemporary Intellectual Virtues in Context

While people are directly familiar with some of the world, they rely on the reports of others to mediate their relation to much of the rest of the world. Traditional accounts of intellectual virtues focus on the individual. Contemporary social epistemology tends to focus on dyadic relations between a single speaker and a single listener. Neither seems adequate to capturing the more complex interdependency facilitated by large public forums online. After all, if virtues are the dispositions we need given the environment we inhabit (Foot 2003), then when our environment changes significantly, so too will the virtues appropriate to it (Heersmink 2018). Likewise, if vices are dispositions we need to avoid given the environment we inhabit, then when our environment changes significantly, so too will the vices that undermine us. In their contribution to this conversation, J. Adam Carter and Daniella Meehan address a trio of vices related to distrust.

Appropriate intellectual virtues may also depend on an agent's position within a network, as well as the topology of the network in which they find themselves (Alfano 2016; Alfano and Skorburg 2017b; Alfano and Robinson 2017). For example, it has long been known that epistemic networks are typically not uniform but rather form a 'small world' or 'rich club', in which information flows through hub individuals (Milgram 1967). Hubs enjoy a much greater degree of epistemic power than the average, where such power is understood as the ability to "influence what people think, believe, and know," as well as to "enable and disable others from exerting epistemic influence (Archer et al. forthcoming). People who occupy the hubs of epistemic networks have exactly this sort of power, and thus need to think carefully about which messages to amplify to their audiences of thousands, millions, and even billions. In his contribution to this conversation, William Tuckwell explores this point in greater detail.

The topology or geometry of networks is particularly important if one wants to intervene on problematic networks (Alfano 2017). For example, Alfano and Robinson (2017) argue that the disposition to gossip appropriately is a virtue in some social contexts. Even uncertain and unreliable gossip can be functional in an appropriately structured network (Mitchell et al. 2016). Likewise, Alfano (2013) argues for the importance of the courage to publicly announce what one knows in the face of silencing social and institutional pressure, thereby potentially triggering information cascades (Bicchieri 2006). The main idea underlying this work is that a virtuous communicator not only speaks, listens, repeats, and passes along what she's heard, but also monitors the structure of the network she's in, as well as the structure of the network others are in and think they're in. Such a communicator uses their knowledge

of network structure to make decisions about which lines of trusted communication to open up or employ, as well as which to shut down.

At a much larger scale, Twitter, Facebook, and other tech giants continuously adjust the algorithms that construct users' newsfeeds from their social networks, suggest new connections, and block problematic users. These phenomena involve rewiring an epistemic network by adding or subtracting lines of trusted communication. A line of trusted communication can, for instance, be targeted by censoring toxic speech (Tirrell 2017), or by undermining the trust that enables problematic messages to spread.

Problematic Epistemic Networks

Epistemic networks can also become problematic in their own right when they play a core role in circulating problematic beliefs. Consider, for example, the spread of online conspiracy theories. . Exposure to and engagement with conspiracy theories can lead to a variety of negative outcomes, from decreasing the likelihood of vaccination (Jolley and Douglas 2014) to rejection of climate change data (Lewandowsky et al. 2013; van der Linden 2015) to political extremism (Hofstadter 1945; Van Prooijen et al. 2015).

Much psychological work on conspiracy theories has focused on individual-level factors, often analogizing conspiracy endorsement to pathological conditions in which individuals form 'monological' belief systems (Goetzel 1994; Swami et al. 2011, 2014). Yet conspiracy endorsement has a complex social epistemology. Apparently contradictory beliefs can often be reconciled by appeal to higher-order epistemic principles (Wood and Douglas 2015; Nyhan et al. 2016). Further, conspiracy theorizing itself has a social function: it helps forge narratives of resistance and self-identification (Raab et al. 2013; Sapountzis et al. 2013; Cichocka et al. 2016).

These effects are amplified by online forums in which conspiracy theories are freely traded and discussed (Wood and Douglas 2013; Bessi et al. 2015). Media coverage of the human papillomavirus (HPV) vaccination, for example, appears to be partly explained by exposure to anti-vaccination sentiment on Twitter (Dunn et al. 2017) and Facebook (Smith and Graham 2019); further, this effect appears to be driven as much by social connections as by the content of the tweets themselves (Zhou et al. 2015; Sullivan et al. 2019). Large forums such as Reddit.com have active conspiracy communities that bring together people of diverse intellectual interests and drive discussion around common narratives (Klein et al. 2018, ms.). These online forums often involve considerable disagreement and debate, and yet—at least for some subpopulations of posters—entrenched opinion as well.

Though we have spoken of the Internet as a single social network, the preceding also emphasizes the heterogeneity of online networks at a finer grain of analysis. Online communities such as Stormfront and 4chan are notoriously, and perhaps irredeemably, toxic. Some of these differences may be driven by design decisions: sites that promote high-volume, anonymous or pseudonymous commentary should be expected to differ in their epistemic dynamics from those that promote slower dialogue and reliable reputation-

tracking. There are also variations within sites themselves. Reddit contains both notoriously toxic communities (Chandrasekharan et al. 2017) and surprisingly well-ordered, epistemically virtuous groups (Tan et al. 2016).

Conclusion

Epistemic networks are older than humans themselves (Sterelny 2012). Yet the recent advent of online social networks has changed our epistemic landscape in both qualitative and quantitative ways. We have argued that the requirements on virtuous epistemic agents must necessarily take into account the altered scale and topology of new epistemic networks. Conversely, new networks bring with them both new opportunities and risks for top-down, policy-level decision-makers. Understanding the full extent of these changes will require moving beyond dyadic analyses and considering the full range of network effects on social knowledge. This process has already begun, and the richness and variety of online sources gives the social epistemologist plenty to examine, explore, and explain.

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