

Bubbles and Chambers: Post-Truth and Belief Formation in Digital Social-Epistemic Environments

Massimiliano Badino, University of Verona

Abstract

It is often claimed that epistemic bubbles and echo chambers foster post-truth by filtering our access to information and manipulating our epistemic attitude. In this paper, I try to add a further level of analysis by adding the issue of belief formation. Building on cognitive psychology work, I argue for a dual-system theory according to which beliefs derive from a default system and a critical system. One produces beliefs in a quasi-automatic, effortless way, the other in a slow, effortful way. I also argue that digital socio-epistemic environments tend to inculcate disvalues in their agent's epistemic identity, a process that causes the cognitive shortcircuits typical of conspiracy theories.

1. Introduction

A specter is haunting our society, the specter of post-truth. It might be less intimidating than communism in the mid-19th century, but is certainly more ghostly and elusive. In the literature, it has become customary to resort to the Oxford English Dictionary definition: "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief." The OED also adds an exemplary sentence: "in this era of post-truth politics, it is easy to cherry-pick data and come to whatever conclusion you desire." Both the definition and the example allude to a cluster of ideas. First, it seems safe to state that post-truth is a particular way to form beliefs. The exemplary sentence clarifies that post-truth is a process of coming to some conclusion, which is a process of belief formation. As such, it has some peculiar traits. According to the OED definition, a belief can be labeled as post-truth when formed by relying preferably on emotions, feelings, impressions, and personal convictions rather than objective factual evidence and critical scrutiny.

Post-truth is a remarkably complex and multifarious phenomenon. It came to prominence in 2016 when it was elected 'word of the year,' in connection with the election of President Trump and the Brexit referendum, and it has been invoked in several social and political events ever since, oftentimes with derogatory intentions (Allcott & Gentzkow 2017; Vogelmann 2018; Block 2019; Kalpokas 2019). We now routinely speak of post-truth to cover phenomena as diverse as partisan news websites, hate groups, social networks, conspiracy theories, flat-Earth theory, anti-vaccine movements, and a multitude of other episodes within and without the internet. Unsurprisingly enough, this extension of scope does not help the conversation. Take, as an illustration, the cognate concept of 'fake news.' It is interesting to note how wide is the spectrum of attitudes towards fake news in the scholarly debate. Some writers have tried to provide a working definition of 'fake news' (Gelfert 2018; Tandoc *et al.* 2017) and even a preliminary epistemological analysis (Rini 2017; Piazza & Croce 2019), some have launched themselves into a passionate campaign against them (Blake-Turner 2020), while others have treated it as a buzzword with floating meaning and an instrument construed to constrain free speech and democratic dissent (Coady 2019; Farkas & Schou 2018; Habgood-Coote 2019).

Given this complicated landscape, it is important, I think, to be precise before embarking on a discussion of post-truth. My aim in this article is rather specific. First of all, I intend to focus on the digital socio-epistemic environments, that is, the online social structures that serve as environments to form and exchange beliefs of the most various sorts. Two concepts have been developed in connection with post-truth in digital environments: epistemic bubbles and echo chambers. Both concepts rely, in different manners, on the notion of 'epistemic filter'. I shall discuss Thi Nguyen's analysis and Filippo Ferrari's and Sebastiano Moruzzi's use of it. In the second part of the article, I bring in a philosophical issue that I see conspicuously absent in the conversation on post-truth: the issue of belief formation. In my view, if we want to go deeper down the rabbit hole of post-truth, we need a satisfactorily account of belief formation, one that is still missing in the philosophical literature. In sections 3 and 4, I outline a proposal, which draws heavily on cognitive and social psychology. Further, in section 5, I elaborate on the bearings that my theory has on the problem of post-truth.

2. Epistemic Filters and Belief Formation

In the lively conversation about the impact of the internet on our epistemic life, two concepts stand out as particularly useful and far-reaching: epistemic bubble and echo chamber (Jamieson & Cappella 2008; Pariser 2011; Nguyen 2020). Ultimately, they are socio-epistemic environments¹ ruled by self-reinforcing mechanisms of doxastic selection, manipulation, and exclusion. According to Nguyen, epistemic bubbles are relatively fragile structures based on controlling the flow of information. Basically, within an epistemic bubble, our access to information is mediated by algorithms, which try to interpret our preferences and, consequently, select the information of interest. While this algorithm-directed mediation might be a convenient way to navigate the otherwise intractable amount of data on the internet and get rapidly at the vacuum cleaner we are looking for, it becomes epistemically problematic when it interferes with, say, our possibility to form a politically informed opinion about the situation of our country and cast a vote accordingly. However, it is relatively easy to escape an epistemic bubble: ultimately, it boils down to doing that extra job the algorithm spares us and getting the missing information (Nguyen 2020 pp. 143–145).

Echo chambers are a different and more vicious business. In an echo chamber, the control mechanism rests on redistribution of trust and epistemic credentials. Typically, an echo chamber is constructed around some strongly ingrained convictions, which positively affects the epistemic agent's attitude toward external sources of confirmation or disconfirmation. In particular, while criticisms of the central tenets are systematically silenced and discredited, confirming pieces of evidence are granted a disproportionate epistemic authority. Critically, the discredit mechanism often includes an anticipation of the critique so that, when the critique comes, it also enjoys the extra-benefit of the prediction. For example, let's assume an echo chamber that endorses a certain conspiracy theory T and assume that its leader anticipates that a certain governmental agency will deny the existence of a certain piece of evidence in support of T. When the agency duly does so, simply because there is no such piece of evidence, the participants in the echo

¹ By 'socio-epistemic environment' I mean a social structure in which beliefs are exchanged through characteristic relational practices. Crucially, I assume that such a structure is an environment because the agents act on it and it acts back, i.e., the relational practices might alter the agents' cognitive and behavioral dispositions. This concept is close, albeit not completely identical to an analogous concept used by Christopher Blake-Turner for similar purposes (Blake-Turner 2020).

chamber will see this statement as a confirmation of the soundness of T, rather than evidence of its disconfirmation (Begby 2017; Nguyen 2020 p. 147).

Most of the discussions on echo chambers and epistemic bubbles seem to share two tenets. First, these environments deploy *epistemic filters*, i.e., they select and channel information, trust, and epistemic credentials in order to manipulate the formation and the circulation of beliefs. Nguyen's analysis of epistemic filters focuses especially on the societal and political impact of echo chambers on epistemic agents. He discusses the dispositifs of exclusion and discriminations put at work in echo chambers and, unsurprisingly enough, touches upon issues of testimonial and epistemic injustice (Nguyen 2020 p. 149).

Second, the functioning of epistemic filters is typically related to certain *structural features* of echo chambers and epistemic bubbles. Consequently, many writers have concentrated on discussing the relational dynamics that establishes itself within such vicious socio-epistemic environments. For example, drawing on Nguyen's work, Benjamin Elzinga has recently suggested that the filtering effect of echo chambers is not inherently bad. Rather, epistemic vice emerges when the interaction between agents is falsehood-conducive (Elzinga 2020). Alternatively, Breno Santos has argued that the peculiar way in which epistemic agents interact in an echo chamber fosters their active structural ignorance, that is, "they behave, epistemically, in a way that makes their belief-forming processes viciously resistant to counter-evidence" (Santos 2020 p. 5; Woomer 2019). While this sustained interest for the structural aspects of the digital socio-epistemic environments is well-motivated, it inevitably runs the risk of overshadowing the role of the epistemic agent and the process of belief formation. One interesting attempt to shift the emphasis from the structure of epistemic environments to how epistemic agents form their beliefs has been carried out by Filippo Ferrari and Sebastiano Moruzzi (Ferrari & Moruzzi forthcoming, 2020). They begin with two reasonable norms of belief formation and belief revision: (i) one is epistemically justified to form the belief that p if and only if p is supported by undefeated good reasons; (ii) one must revise the belief that p if there is an undefeated defeater of p (Ferrari & Moruzzi 2020 p. 34). These two norms immediately raise the problem of relevance: how does one decide what evidence is relevant to form or revise a belief? Here is where the concept of epistemic filter comes in:

An epistemic filter is a selection function which takes as inputs the total evidence and the set of the enquirer's background assumptions and outputs a demarcation of the body of evidence over which the epistemic norms range.

(Ferrari & Moruzzi forthcoming)

A variety of inquiry styles can thus be distinguished according to the features of the epistemic filter adopted. According to Ferrari and Moruzzi, an epistemic agent begins with a number of background assumptions about the world and an epistemic filter. When it comes to forming new beliefs or revising them, the epistemic filter determines how strongly one will stick to the background assumptions. Thus, by investigating how epistemic filters change the role of evidence in supporting and revising a belief, Ferrari and Moruzzi construct a taxonomy of the epistemic attitudes toward evidence. They argue that epistemically vicious agents such as conspiracy theorists tend to stick to their beliefs regardless of the empirical evidence.

Whereas I think that these accounts nicely complement each other, I think that they still miss an important piece of the puzzle. These analyses do an excellent job revealing the internal dynamics of toxic environments and the subtle difference that tells apart a conspiracy theorist and a scientist. However, the resulting picture still needs to be connected to a satisfactory epistemological account of belief formation. It seems reasonable to assume that for socio-epistemic environments to effectively display their filtering effect, their structural features must somewhat cooperate with a mechanism of belief formation, which is prone, in certain conditions, to be affected by epistemic filters. In other words, if echo chambers and epistemic bubbles work so well in manipulating and influencing our beliefs, it must be because their structural features interact in a doxastically vicious way with our mechanism of forming beliefs. What this mechanism is and how it is affected by the structures of certain socio-epistemic environments remains unexplained. Approaches such as Nguyen's, Elzinga's, and Santos' tend to black-box what happens at the doxastic level. The Ferrari-Moruzzi approach, while a step in the right direction, only treats belief formation and revision as epistemic norms. What I see missing in this discussion is an account of *how* beliefs are formed and what epistemic values are at stake in this process.

In the remainder of this article, I try to make some preliminary moves to fill this gap. In particular, I develop a proposal for a dual-system theory of belief formation. This proposal draws on analogous theories in social and cognitive psychology, but I hope to show that it also intercepts several apparently disconnected research threads in epistemology. Before starting, however, let me add a word of caution. In the limited space of this article, it is not possible to develop a full-fledged theory of belief. More humbly, my purpose is to outline the main features of a research program. Thus, I ask for the reader's indulgence if some steps of the next sections will occasionally appear sketchy.

3. The Duality of Belief Formation

Approaches based on the duality of mental processes became increasingly popular in social and cognitive psychology from the early 1980s onwards (Evans 2008, 2009; Frankish 2010; Gawronski *et al.* 2014). Although applied to an extraordinarily vast spectrum of phenomena, these theories share a common idea: the duality of our mind. On the one hand, agents tend to think, decide, and act in a fast, resource-saving, intuitive way, whereas on the other, they also display the tendency to follow slow, resource-consuming, reasoned procedures. The key assumption of the dual-process theories is that these two radically different kinds of processes are both involved in determining our attitude. Which process is prominent in a cognitive or behavioral act depends on contextual conditions. For this reason, a major part of research in social and cognitive psychology focuses on establishing the primers and determinants of these processes. To give only one example, the current paradigm in the study of prejudice affirms that the tendency to stereotype, which is faster and cognitively less demanding, coexists with the push to be more considerate (Devine & Sharp 2009). Furthermore, contrary to what was believed some decades ago (Devine 1989), our behavior is very malleable: a slight variation in the contextual conditions or the intensity of such and such primer can result in completely different outcomes (Devine 2001).

The situation changes a bit when we move from behavior to reasoning, judgment, and rationality. In order to encompass the variety of human performances as well as their generality, cognitive psychologists have extended the idea of two processes to the idea of

two *systems* of reasoning. It is important to appreciate the difference. A system of reasoning is a composite structure including processes, representations of data, types of outputs, modes of working, intended goals, and so forth. Steven Sloman, a pioneer of the field, distinguished between associative and rule-based systems:

Human reasoning seems to be performed by two systems, two algorithms that are designed to achieve different computational goals. One is associative, and it seems to operate reflexively. It draws inferences from a kind of statistical description of its environment by making use of the similarity between problem elements interpreted (...) using such aspects of general knowledge as images and stereotypes. The other is rule-based and tries to describe the world by capturing different kinds of structure, structure that is logical, hierarchical, and causal-mechanical. (Sloman 1996 p. 6)

Besides associative vs. rule-based, other dualisms have been used to describe the two systems of reasoning: heuristic vs. analytic (Evans 1989), experiential vs. rational (Epstein 1994), and recognition-primed vs. rational-choice (Klein 1998). In the early 2000s, as the labels were multiplying quickly, Keith Stanovich suggested to call them System 1 and System 2, a terminology that eventually stuck (Stanovich 1999, 2000; Sloman 2014).

Simply put, my proposal is to apply the dual-system approach to belief formation. More specifically, I submit that two *epistemic systems* underlie the belief-forming process: the *default system* (or D-system, for short) and the *critical system* (or C-system), respectively. By epistemic system, I mean a structure consisting of two main ingredients: (1) the epistemic attitude toward novel evidence and (2) the epistemic values or goals. In other words, to form or revise a belief requires mobilizing data and cognitive resources, but it also involves assuming a certain attitude toward evidence and setting the epistemic goals to attain. Furthermore, I call core beliefs and values (or CBV) the totality of beliefs and values that an epistemic agent assumes as its own in the process of belief formation. The CBV has an internal structure, that is, some beliefs and values are more central and important than others.²

² To be more specific, the CBV are both doxastic items such as background beliefs previously acquired, and axiological items of methodological, moral, and social nature. While it seems commonplace in theory of belief to admit a role for background assumptions (but there is an exception, see section 4), it is much more unusual to include values.

Roughly speaking, the D-system prioritizes habituality and contextual, goal-oriented optimality, while the C-system prioritizes revisionality and decontextual, objective truth. Let me spell these differences out. In forming a belief, the D-system tends to prefer those that fit with the CBV. If one imagines the belief-forming process as a compatibility test between the CBV and new evidence, then the D-system keeps the CBV firm and tends to reject those beliefs in tension with it. In other words, the D-system is *habitual* in the sense that it typically produces beliefs as compatible with the CBV as possible. Of course, a habitual belief-forming process is fast and resource-saving. It relies on low-demand cognitive resources such as associative thinking, which checks for family resemblances between the CBV and the novel evidence. Therefore, it is suitable for stressful situations in which a shortage of time and resource-depletion require a fast decision based on what we already believe as sure. As the CBV has an internal structure, compatibility is a matter of degrees. It is possible to give up some peripheral beliefs and values, especially whether the examined new belief has a high epistemic value, as we will see in a moment. However, there always comes a moment in which the cognitive cost of surrendering some part of the CBV overcomes the epistemic gain of the belief.³ The D-system measures the epistemic gain of a belief in terms of optimality, not in terms of the capital-T, objective truth. Thus, it looks for beliefs that are good enough for the specific goals at hand. I explore this idea more extensively in the next section.

By contrast, the C-system has a *revisional* character in that it allows the possibility to reject even well-rooted and central pieces of the CBV in the face of novel evidence. Such a revisional approach is clearly slow and resource-consuming because it requires close scrutiny of the options and demands rule-based reasoning for inquiry and justification. In general, it takes substantial arguments to abandon ingrained convictions, and substantial arguments call for a cognitive investment. Understandably, the C-system aims at epistemically more ambitious beliefs, that is, objective, context-independent, capital-T truth. Thus, the two epistemic systems mobilize different kinds of cognitive resources and put them at the service of different epistemic attitudes and goals. The D-system is habitual and aims at goal-oriented optimality, the C-system is revisional and uses more energy-demanding resources to obtain context-independent truth. One might ask whether

³ While the issue of the trade-off between epistemic gain and epistemic cost has been largely discussed in the epistemology of implicit bias and stereotypes, it seems conspicuously absent in the theory of belief (Gendler 2011; Antony 2016).

this dichotomy habitual/goal-oriented vs. revisional/context-independent is genuine. Isn't it possible, for example, to have a habitual attitude and still aim at capital-T truth? Or, vice versa, to be ready to revise one's own CBV and setting context-dependent optimality as a goal? My answer is that, while the epistemic systems, as they are defined, are dichotomic, the individual cases of belief formation do not need to be so. Certainly, the way in which novel evidence is engaged and the goal of the belief-forming process are radically different in the D-system and the C-system, but, as we will see later, an actual belief results from the complex interaction between the two epistemic systems. Thus, while the two systems pull to very different epistemic directions, the doxastic output is a complex (and context-dependent) negotiation between them.

4. Three Points on Belief Formation

The account outlined in the previous section highlights three points worth further attention: (1) the duality of epistemic attitudes, (2) the duality of epistemic goals, and (3) the duality of the belief-forming process. The first point reconnects with Ferrari's and Moruzzi's discussion of epistemic filters. My proposal amounts to claiming that the tendency to stick to certain core beliefs is built into our belief-forming system, although certain socio-epistemic environments can certainly exacerbate this attitude. I come back to this point in the next section. In this section, I want to briefly concentrate on points (2) and (3) and show that they intercept other epistemological lines of research.

I have claimed that the D-system aims at goal-oriented, context-dependent optimality. By this, I mean that the beliefs typically produced by the D-system do not need to be literally true under any circumstance: they suffice to be good enough to achieve a certain goal. Trying to form beliefs quickly, the D-system naturally limits the number of factors to take into account. Accordingly, it sticks to the CBV as much as possible and focuses on obtaining a specific, context-dependent goal or meeting a specific requirement. Several authors have recently suggested that, under certain circumstances, we are more than happy with limited, goal-attuned optimality than with global, literal truth. For example, Catherine Elgin argued that sometimes, we operate with "felicitous falsehoods", i.e., assumptions, beliefs, or other types of cognitive items that we know in advance to be false, but are productive anyhow in the specific context of use and for the specific purpose

at hand (Elgin 2004, 2019). According to Elgin, we do not always need to seek capital-T truth to have knowledge. At times, "true enough" is just as good:

Context provides the framework. Purposes fix the ends. Function is a matter of means. The sentences that concern us tend not to have purposes or functions in isolation. Rather, they belong to and perform functions in larger bodies of discourse, such as arguments, explanations, or theories that have purposes. In accepting a sentence, then, we treat it in a given context as performing a function in a body of discourse which seeks to achieve some end. (Elgin 2004 p. 121)

However, one might argue that, to the extent that holding a belief is also taking a decision, beliefs aimed at being just "true enough" are simply irrational decisions, hence ill-formed beliefs. For, decision theory traditionally requires that the deliberative beliefs and preferences of a decision-maker are consistent with her background attitudes, the latter being largely stable across different decision problems and thus context-independent. However, Brian Kim argued that such global coherence is at odds with empirical findings on preference reversal and suggested replacing it with what he calls all-things-relevant rationality (Kim 2014). In his view, it is rational to decide based on the states and consequences relevant to the specific problem at hand. In addition, Wesley Buckwalter and John Turri have recently shown that knowledge attribution is not jeopardized by a belief being just "true enough." On the contrary, their experiments prove that people are perfectly ready to attribute knowledge to agents holding beliefs only approximately true, to the extent that they concern the salient aspects of the specific situation (Buckwalter & Turri 2020).

Thus, there seems to be an epistemologically meaningful distinction to draw between the context-dependent optimality pursued by the D-system and the capital-T truth pursued by the C-system. Interestingly, this distinction does not force us to abandon monism toward epistemic goals. Building on the limitations of the thesis that truth (that is capital-T truth) is the only epistemic goal, Kristoffer Ahlstrom-Vij, and Stephen Grimm argued that truth is merely a species of a more general genus, which they call "getting it right." Ultimately, the basic epistemic goal amounts to getting the world right (accuracy monism), and this might come in different varieties, including propositional truth, true understanding of the connections between phenomena, or, I submit, goal-oriented approximated optimality (Ahlstrom-Vij & Grimm 2013).

Let's move on to point (3) and particularly to the difference between default beliefs and critical beliefs. Roughly speaking, by default belief, I mean an almost automatic belief formed by association and family resemblance to the CBV. This view is not wholly new in epistemology. Building on Gilbert Harman's work (Harman 1973, 1978), Kent Bach applied the concept of default reasoning to treat Gettier-like objections to the standard view of knowledge (Bach 1984). Bach defines default reasoning as "inference to the first unchallenged alternative:" one usually believes (and justifiably so) the first thing that comes to mind, which is undefeated by counter-reasons. Naturally enough, default beliefs are shaped by the CBV. This is clear by Bach's analysis of the Gettier problem. To fix ideas, let us consider Goldman's version of the problem. A person stands before what she believes (correctly) to be a barn, while, unbeknownst to her, the entire area is full of fake barns (Goldman 1976). Famously, the argument goes that, although that person has a true and justified belief of standing before a barn, she has no genuine knowledge because she is right by sheer luck. To this, Bach replies that the belief that she stands before a real barn comes from the belief that there are no fake barns in the area, a belief that she has by default and would be true under normal circumstances. But in this case, she has no knowledge because (1) her belief about the barn derives from a false taken-for-granted belief, and (2) no reasoning involving a false belief can produce knowledge (Bach 1984 pp. 40–43). Rather than concerning ill-defined epistemic luck, the Gettier problem is just an exemplary application of the trivial principle (2). Bach's argument hinges on the taken-for-grantedness ingrained in the process of belief formation. I have argued along the same direction by claiming that the CBV provides us with a set of taken-for-granted beliefs and values the D-system tends to preserve as much as possible.

The reader might now reply, somewhat as before, that what I have been hitherto describing is rather a pathological form of believing. In other words, "jumping to conclusions" is something we certainly do, but we should not because our epistemic obligation is to form beliefs by pondering reasons for and against. This is close to what Kim calls all-things-considered rationality and in the theory of belief has precisely the same limitations it has in decision theory. Let's see why. The thesis that it is possible, and in fact recommendable, to form the belief that *p* after having pondered carefully whether *p* is true is widespread and conventionally associated with Descartes. In the *Meditations*, Descartes describes how he reached the truth after long deliberation and how he was able

to withhold his belief before the end of this process (Descartes 1641). In other words, Descartes views belief formation as a two-step process. Firstly, one entertains proposition *p* and considers reasons for and against it. Secondly, when the deliberation is concluded, one either accepts or rejects *p*. It is only at this point that the agent believes that *p* (Gilbert 1991; Egan 2008; Huebner 2009; Mandelbaum 2014). Ultimately, Descartes' theory consists of the following three claims: (1) it is possible to evaluate *p* without already believing that *p*; (2) belief formation is sensitive to reasons, that is, we form a belief after rational deliberation; (3) accepting or rejecting a belief are the same kind of process (of opposite sign, of course).

But Descartes' theory is not the only game in town. In *Ethics*, Spinoza proposes an alternative account of the same process (Spinoza 1677). According to Spinoza, when presented with a proposition *p*, we automatically accept it and only subsequently scrutinize it for confirmation or rejection. Thus, Spinoza counterposes the following claims: (1') it is not possible to evaluate a proposition without already believing it, albeit preliminarily; (2') the formation of belief is insensitive to any form of support other than the belief itself, i.e., one accepts *p* only because one is presented with *p*; (3') accepting or rejecting a belief are two essentially different processes. In particular, the two theories differ on the role of will and truth. According to Descartes, believing is a voluntary assent to a proposition taken for true, while for Spinoza, one believes that *p* involuntarily and, more importantly, regardless of its truth.

Intuitive and widespread as Descartes' theory may be, several considerations speak against it. In particular, a wealth of psychological evidence seems to suggest that our mind is fundamentally Spinozan, i.e., we, so to speak, "jump to beliefs" and postpone checking (Gilbert 1991; Mandelbaum 2014).⁴ In addition, the Spinozan account makes a clear-cut difference between the automatic, effortless process of believing and the effortful, deliberate process of evaluating a belief. This distinction maps onto the automatic/controlled distinction of cognitive and social psychology (Huebner 2009). In a

⁴ It should also be noticed that the dualism between the Cartesian and Spinozan views of belief mirrors almost perfectly the dualism between reductionism and antireductionism in the epistemology of testimony. As a consequence, one might try to translate arguments against reductionism into arguments against the Cartesian view (Shieber 2015 pp. 99–147). This point seems to have escaped the attention of philosophers and cognitive psychologists.

Spinozan framework, jumping to believing is not a sign of epistemic sloppiness but rather how our mind works.

My account is somewhat halfway between Descartes and Spinoza, as I accept (1') and (3'), but reject (2'). Let me elaborate on this point. Descartes claims that believing *p* is an effortful process (of accepting or rejecting *p*) based on reasons. For simplicity's sake, I call this position *reason-driven monism* about belief. By contrast, Spinoza thinks that believing that *p* is an effortless, automatic process based on the very fact that one happens to be presented with *p*. This position amounts to a sort of *undriven dualism* about belief. My view, which I dub *CBV-driven dualism*, is partly Cartesian in that I hold that our beliefs are supported, but this support is the CBV, together with contextual factors. However, my position is also partly Spinozan in that I hold that forming a new belief results from an effortless association-based cognitive process, while revising it calls for a cognitive effort. I, therefore, replace (2') with (2'') belief formation is sensitive to CBV via an association-based process. Contrary to Spinoza, I hold that there are background elements underpinning our beliefs, but contrary to Descartes, I hold that these elements contain values and that their underpinning is associative in nature. There is no room here for a full criticism of (2'), but my key point is that (2') makes it difficult to account for different doxastic reactions to the same proposition *p*. More specifically, the Spinozan view rests on the assumption that previously acquired beliefs and values play no role at all in forming a new belief. Beliefs are produced by a sort of reflex action. From the standpoint of cognitive psychology, the main argument supporting this theory lies in the automaticity of our doxastic reaction, especially under conditions of resource depletion. However, the view I am defending here might be consistent with these psychological findings. The D-system's association process is based on Gestalt-like family resemblance and is therefore fast and effortless. In addition, experimental results on the cognate field of stereotypes seem to show that CBV cannot be left completely out of the picture.⁵

⁵ To mention only one example, several studies on intergroup and intragroup relations show that the distinction between “we” and “them” affects profoundly human conditions (Schaller & Neuberg 2008). This distinction is based precisely on core background values.

5. The Division of Cognitive Labor and the Problem of Post-Truth

So far, I have especially focused on the role of the D-system. In this section, however, I want to come back to the interaction between the two systems and what this can tell us about the problem of post-truth. Ideally, the D-system and the C-system should divide the cognitive labor in a Spinozan way. The D-system produces goal-oriented beliefs in an effortless, quasi-automatic way, but the CBV strongly influences these beliefs, thus they are potentially biased. Then, the C-system comes to check the preliminarily accepted beliefs through an effortful, rule-based process which aims at capital-T truth and, in so doing, might question any part of the CBV, starting with the peripheral items. This cooperation should ensure that a resource-saving system is deployed to yield fast decisions in quotidian situations and the resource-demanding system is activated only for damage control. Unfortunately, the reality is less than ideal. In fact, both systems seek supremacy. Borrowing an expression from Steven Sloman, we can describe this process as a combination of intrusion and suppression (Sloman 1996 p. 15). On the one hand, the D-system intrudes in the belief formation simply because it is faster and can always have "its opinion heard." On the other, the C-system can overrule the D-system in the name of a superior epistemic goal and aim for a more thorough evaluation of the options. Because the epistemic attitudes and goals underlying the two systems are complementary but partially in conflict, their relation never settles to a fully cooperative division of the cognitive labor. Which system is predominant in each situation is largely a matter of context. A great variety of environmental factors can determine the activation of each system and, therefore, the success of intrusion or suppression. It is precisely this point that bears on the problem of post-truth in digital environments.

The problem of post-truth seems to have two sides. The first side is the acceptance of beliefs on a non-evidential basis, as highlighted by the OED definition. The spontaneous reaction to this form of post-truth is to consider it an outrageous violation of the most basic epistemic obligations and to condemn it as gullibility at best. Recently, however, Boyd Millar has argued that such accusations might be unfair (Millar 2019). According to Millar, people's violation of epistemic obligations on the internet is largely blameless because of the way in which both the social networks and our minds work. Phenomena such as the truth effect or confirmation bias combined with echo chambers and epistemic

bubbles are sufficient excuses for people to fall prey to epistemic vices. I agree with the gist of Millar's analysis. According to my theory, epistemic obligations can be systematically met only by the C-system, while the complexity and velocity of the interaction on the internet usually activate the D-system. How the internet, as a socio-epistemic environment, structurally works definitely favors quasi-automatic, effortless belief formation over critical scrutiny.

This, however, is only part of the story. For, social networks can also be a useful source of information and critical reflection. Facebook groups, such as the social epistemology network, to mention only one example, are structurally similar to hate groups without affecting people in the same fashion. To explain this difference, it is key to remember that the D-system depends on the CBV. My contention is that some echo chambers and epistemic bubbles are dangerous because they insinuate certain (epistemic and moral) disvalues in the CBV of their users. In other words, they make disvalues such as gender or racial intolerance part of the beliefs and values that an epistemic agent will not give up easily and trigger the activation of the D-system. In the worst-case scenario, such disvalues become entrenched with the user's personal identity to the point that the agent becomes personally defined by them.

This process of identity redefinition brings me to the second side of post-truth. Gullibility is annoying and potentially dangerous for our social systems, but perhaps even more epistemologically perplexing is that, after forming beliefs on a non-evidential basis, people do hard cognitive work to defend them. We see this phenomenon in conspiracy theories, anti-vaccine movements, flat-earthers, and so forth. Once again, echo chambers play a role in these phenomena by systematically discrediting dissenting voices and thus stirring up passionate reactions. More importantly, as Ferrari and Moruzzi stress, one cannot simply dismiss conspiracy theories in purely veritistic terms. Flat-earthers pursue truth as strongly and dedicatedly as round-earthers do. I want to argue that a more meaningful difference can be drawn in terms of belief formation. As we have seen, in an ideal situation, the D-system forms beliefs, and the C-system checks them for biases and mistakes. Intrusions and suppressions continuously perturb this dynamics, but, by and large, we should activate the C-system to put in question the beliefs formed by the D-system. It makes very little cognitive sense to use high-level resources just to obtain the same result that can be obtained *via* an effortless process. Nonetheless, this is precisely

what happens with conspiracy theories. For example, not only do anti-vaccinists form their beliefs on a scarce evidential basis, but they also put a lot of effort into arguing in favor of their theses and responding to counterarguments. Such cognitive shortcircuit, I think, goes beyond sheer stubbornness and the structural features of echo chambers. It stems from the fact that the beliefs they are strenuously defending are so deeply rooted in their CBV that are part of their own identity not only as epistemic agents but as social and political agents as well. In other terms, what is at stake in post-truth is not a theory on the form of the earth, the efficacy of vaccines, or the reality of climate change, but rather that these cease to be empirical claims and become a defining feature of the agent's personal identity. This issue reaches out the bigger problem of how the relational practices of digital socio-epistemic environments affect agents' cognitive and social dispositions, an issue that, I suspect, has profound epistemological implications.

6. Conclusion

In the foregoing sections, I have defended a dual-system theory of belief. According to this theory, there are two epistemic systems, which determine how we form our beliefs. The D-system is habitual and goal-oriented. It means that it tends to maintain the CBV and to achieve contextual optimality or approximate-truth-for-a-certain purpose. The C-system is revisional and truth-oriented. It means that it can revise the CBV, and it aims at capital-T truth. The two systems draw on different cognitive resources. I have also argued that my theory is a modified Spinozan view because, while I accept the Spinozan claim that forming a belief and revising it are two essentially different processes, I also hold that beliefs are associatively formed against the background of the CBV.

The CBV come with an internal structure, i.e., some beliefs and values are more important than others. Collectively, the CBV represent our epistemic identity: the deeper a belief or value seats, the more it affects our self-image as epistemic agents. This theory yields an interesting perspective on the problem of post-truth. Attitudes toward agents committing a blatant breach of basic epistemic obligation on the internet range from outright condemnation to moderate excusal. Many writers have blamed the relational dynamics of social networks, which often generate echo chambers and epistemic bubbles. Other writers, however, notice that echo chambers are not necessarily evil. My contention is that

the structure of the echo chambers and epistemic bubbles enhance the D-system's ability to intrude on the belief formation. How these socio-epistemic environments alter the agents' dispositions to activate the C-system is certainly a subject worth further study, and it should combine with similar studies in social and cognitive psychology. However, I have also argued that one can discriminate between acceptable and vicious echo chambers by looking at the effect on the CBV. In particular, malicious socio-epistemic environments are able to inculcate certain disvalues deep into the CBV of the agents to the point that these agents mobilize high-level resources to support the beliefs produced by the D-system. Thus, the resulting intertwining of epistemic, social, and political identity activates the cognitive shortcircuit typical of post-truth.

References

- Ahlstrom-Vij, K., & Grimm, S. R. (2013). Getting it Right. *Philosophical Studies*, **166**(2), 329–347.
- Allcott, H., & Gentzkow, M. (2017). Social Media and Fake News in the 2016 Election. *Journal of Economic Perspectives*, **31**(2), 211–236.
- Antony, L. M. (2016). Bias: Friend or Foe? Reflections on Saulish Skepticism. In M. S. Brownstein & J. Saul, eds., *Implicit Bias and Philosophy*, Vol. 1: Metaphysics and Epistemology, Oxford: Oxford University Press, pp. 157–190.
- Bach, K. (1984). Default Reasoning: Jumping to Conclusions and Knowing When to Think Twice. *Pacific Philosophical Quarterly*, **65**(1), 37–58.
- Begby, E. (2017). Epistemic Pre-emption, Presented at the American Philosophical Association. Pacific Division Meeting.
- Blake-Turner, C. (2020). Fake News, Relevant Alternatives, and the Degradation of Our Epistemic Environment. *Inquiry*, 1–21.
- Block, D. (2019). *Post-Truth and Political Discourse*, Cham: Palgrave MacMillan.
- Buckwalter, W., & Turri, J. (2020). Knowledge, Adequacy, and Approximate Truth. *Consciousness and Cognition*, **83**, 102950.
- Coady, D. (2019). The Trouble With 'Fake News.' *Social Epistemology Review and Reply Collective*, **8**(10), 40–52.
- Descartes, R. (1641). *Meditations on First Philosophy*. (M. Moriarty, Ed.), Oxford: Oxford University Press.
- Devine, P. G. (1989). Stereotypes and Prejudice: Their Automatic and Controlled Components. *Journal of Personality and Social Psychology*, **56**(1), 5–18.
- Devine, P. G. (2001). Implicit Prejudice and Stereotyping: How Automatic Are They? *Journal*

- of Personality and Social Psychology*, **81**(5), 757–868.
- Devine, P. G., & Sharp, L. B. (2009). Automaticity and Control in Stereotyping and Prejudice. In T. D. Nelson, ed., *Handbook of Prejudice, Stereotyping, and Discrimination*, New York: Psychology Press, pp. 61–87.
- Egan, A. (2008). Seeing and Believing: Perception, Belief Formation and the Divided Mind. *Philosophical Studies*, **140**(1), 47–63.
- Elgin, C. Z. (2004). True Enough. *Philosophical Issues*, **14**(1), 113–131.
- Elgin, C. Z. (2019). *True Enough*, Cambridge, MA: The MIT Press.
- Elzinga, B. (2020). Echo Chambers and Audio Signal Processing. *Episteme*, 1–21.
- Epstein, S. (1994). Integration of the Cognitive and the Psychodynamic Unconscious. *American Psychologist*, **49**, 709–724.
- Evans, J. St. B. T. (1989). *Bias in Human Reasoning: Causes and Consequences*, Mahwah, NJ: Erlbaum.
- Evans, J. St. B. T. (2008). Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition. *Annual Review of Psychology*, **59**(1), 255–278.
- Evans, J. St. B. T. (2009). The Duality of Mind: An Historical Perspective. In J. St. B. T. Evans & K. Frankish, eds., *In Two Minds: Dual Processes and Beyond*, Oxford: Oxford University Press, pp. 1–32.
- Farkas, J., & Schou, J. (2018). Fake News as a Floating Signifier: Hegemony, Antagonism and the Politics of Falsehood. *Javnost - The Public*, **25**(3), 298–314.
- Ferrari, F., & Moruzzi, S. (forthcoming). Enquiry and Normative Deviance. The Role of Fake News in Science Denialism. In S. Bernecker, A. Flowerree, & T. Grundmann, eds., *The Epistemology of Fake News*, Oxford: Oxford University Press.
- Ferrari, F., & Moruzzi, S. (2020). *Verità e Post-Verità: Dall'Indagine alla Post-Indagine*, Bologna: 1088 Press.

- Frankish, K. (2010). Dual-Process and Dual-System Theories of Reasoning. *Philosophy Compass*, **5**(10), 914–926.
- Gawronski, B., Sherman, J. W., & Trope, Y. (2014). Two of What? A Conceptual Analysis of Dual-Process Theories. In J. W. Sherman, B. Gawronski, & Y. Trope, eds., *Dual-Process Theories of the Social Mind*, New York: The Guilford Press, pp. 3–19.
- Gelfert, A. (2018). Fake News: A Definition. *Informal Logic*, **38**(1), 84–117.
- Gendler, T. S. (2011). On the Epistemic Costs of Implicit Bias. *Philosophical Studies*, **156**(1), 33–63.
- Gilbert, D. T. (1991). How Mental Systems Believe. *American Psychologist*, **46**(2), 107–119.
- Goldman, A. I. (1976). Discrimination and Perceptual Knowledge. *Journal of Philosophy*, **73**, 771–791.
- Habgood-Coote, J. (2019). Stop Talking about Fake News! *Inquiry*, **62**(9–10), 1033–1065.
- Harman, G. (1973). *Thought*, Princeton, NJ: Princeton University Press.
- Harman, G. H. (1978). Using Intuitions about Knowledge to Study Reasoning: A Reply to Williams. *The Journal of Philosophy*, **75**(8), 433.
- Huebner, B. (2009). Troubles with Stereotypes for Spinozan Minds. *Philosophy of the Social Sciences*, **39**(1), 63–92.
- Jamieson, K. H., & Cappella, J. N. (2008). *Echo Chamber: Rush Limbaugh and the Conservative Media Establishment*, Oxford: Oxford University Press.
- Kalpokas, I. (2019). *A Political Theory of Post-Truth*, Cham: Palgrave MacMillan.
- Kim, B. (2014). The Locality and Globality of Instrumental Rationality: The Normative Significance of Preference Reversals. *Synthese*, **191**(18), 4353–4376.
- Klein, G. A. (1998). *Sources of Power: How People Make Decisions*, Cambridge, MA: MIT Press.
- Mandelbaum, E. (2014). Thinking is Believing. *Inquiry*, **57**, 55–96.
- Millar, B. (2019). The Information Environment and Blameworthy Beliefs. *Social*

- Epistemology*, **33**(6), 525–537.
- Nguyen, C. T. (2020). Echo Chambers and Epistemic Bubbles. *Episteme*, **17**(2), 141–161.
- Pariser, E. (2011). *The Filter Bubble: What the Internet Is Hiding from You*, London: Penguin.
- Piazza, T., & Croce, M. (2019). Epistemologia delle fake news. *Sistemi Intelligenti*, **31**(3), 433–461.
- Rini, R. (2017). Fake News and Partisan Epistemology. *Kennedy Institute of Ethics Journal*, **27**(2S), E-43-E-64.
- Santos, B. R. G. (2020). Echo Chambers, Ignorance and Domination. *Social Epistemology*, 1–11.
- Schaller, M., & Neuberg, S. L. (2008). Intergroup Prejudices and Intergroup Conflicts. In C. Crawford & D. Krebs, eds., *Foundations of Evolutionary Psychology*, Mahwah, NJ: Psychology Press, pp. 401–414.
- Shieber, J. (2015). *Testimony. A Philosophical Introduction*, London: Routledge.
- Slooman, S. A. (1996). The Empirical Case for Two Systems of Reasoning. *Psychological Bulletin*, **119**(1), 3–22.
- Slooman, S. A. (2014). Two Systems of Reasoning. An Update. In J. W. Sherman, B. Gawronski, & Y. Trope, eds., *Dual-Process Theories of the Social Mind*, New York: The Guilford Press, pp. 69–79.
- Spinoza, B. (1677). *Ethics*, Indianapolis: Hackett.
- Stanovich, K. E. (1999). *Who is Rational? Studies of Individual Differences in Reasoning*, Mahwah, NJ: Erlbaum.
- Stanovich, K. E. (2000). Individual Differences in Reasoning: Implications for the Rationality Debate? *Behavioral and Brain Sciences*, **23**, 645–726.
- Tandoc, E. C., Lim, Z. W., & Ling, R. (2017). Defining “Fake News.” *Digital Journalism*, **6**(2), 137–153.

- Vogelmann, F. (2018). The Problem of Post-Truth. Rethinking the Relationship between Truth and Politics. *Behemoth. A Journal on Civilization*, **11**(2), 18–37.
- Woomer, L. (2019). Agential Insensitivity and Socially Supported Ignorance. *Episteme*, **16**(1), 73–91.