

# Is a Unified Account of Conspiracy Theories Possible?

*Philippe Huneman\* and Marion Vorms\*\**

*\* Institut d'Histoire et de Philosophie des Sciences et des Techniques  
CNRS/Université Paris 1 Panthéon-Sorbonne*

*\*\* Birkbeck College, University of London  
Institut d'Histoire et de Philosophie des Sciences et des Techniques  
CNRS/Université Paris 1 Panthéon-Sorbonne*

## *Abstract*

This paper proposes a critical assessment of the concept of “conspiracy theory” as a coherent object of investigation, and evaluates the prospects for an integration of various avenues of research—sociological, epistemological, psychological—that deal with it. Because of the threat posed by conspiracy theories to public health and political stability, academic efforts to understand the sociological and cognitive basis for the adoption of such views, as well as their epistemological flaws, are undoubtedly needed. But the preliminary question of the unity, and of the specificity of the class of things called “conspiracy theories”, is often overlooked. It is addressed in this paper.

Starting from a tentative classification of the various ideations labelled “conspiracy theories”, we then focus on a particularly important subclass thereof, namely those promoting anti-scientific views. From this, we draw a first, sceptical conclusion as to the existence of a clear-cut boundary between conspiracy thinking and healthy rational critique of science (both sociological and philosophical). This leads us to evaluate the attempt of analysing conspiracy theories’ epistemic flaws in the light of philosophical standards for scientific theories. Having shown that this route is a dead-end, we highlight what appears as a major divide among philosophical and psychological accounts of CTs, namely whether one should treat them as irrational, or as merely wrong (in the latter, rationalist approach, CTs would just be wrong statements resulting from rational operations). Focusing again on anti-science CTs, we finally argue in favour of a politically and socially contextualised approach to the growth and spread of conspiracy ideations, over a scheme considering CTs as abstract entities, independently from the socially situated agents who hold them.

*Keywords:* Rationality Cognitive biases, Theory, Scientific pluralism.

## 1. Introduction

With the rise of the Internet and the social media, and the subsequent information revolution, it seems that conspiracy theories have found a way to spread and develop more quickly and widely than ever before. Whether this observation is true

or not is an important empirical question. But whatever the answer, *talking* of conspiracy theories, especially in a pejorative manner, has become extremely widespread in the general public, much beyond academia. Not only are some particular conspiracy theories put under critical scrutiny, but also it is common parlance, nowadays, to denunciate the pervasiveness of a ‘conspiracist’ worldview more generally, and to emphasise that such a thought tendency is at the root of many social diseases, such as religious radicalisation and terrorism, or many public health problems (like those caused by anti-vaccine movements). In many Western countries, there is a governmental effort, sometimes in collaboration with school teachers and social workers, to fight the development of conspiracy ideation among the youth.<sup>1</sup>

In a lighter spirit, conspiracy theorists are often made fun of, and portrayed as simplistically minded people. See for instance the parodic Facebook reaction buttons (Fig. 1), which suggests how widespread the notion of conspiracy theory is among the public.<sup>2</sup>

### Nouveaux boutons Facebook Reaction pour complotistes Désignez le responsable en un seul clic!

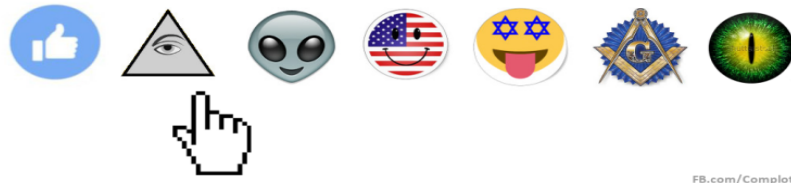


Figure 1. “New Facebook reaction buttons for conspiracists. Just click to assign blame to the responsible!” (<http://complots-faciles.com/blog/2016/09/18/facebook-introduit-de-nouveaux-boutons-pour-complotistes/>).

Furthermore, a look at some social media like Facebook is enough to realise that sometimes, even people holding what is generally considered as conspiracist ideas, use the phrase “conspiracy theoriser” as an insult to mock others (who may believe in even crazier theories, as compared to the supposedly serious ones advocated by the former).<sup>3</sup>

On the other hand, rather than mocking the naive and unsophisticated aspect of conspiracy theorising, one can also be tempted to insist on the remarkable complexity of some of these constructs (e.g. Wood *et al.* 2012; Goertzel 1994)—thus suggesting that it is not so easy to debunk them, and that serious epistemological analysis has to be led. Such a move often goes hand in hand with an analysis of conspiracy theories as *theories*, taking the latter term seriously. This sort of non-pejorative—or at least partially admiring—approach to conspiracy theories may also lead to views that describe them as a sort of subjective narratives making

<sup>1</sup> For a critical appraisal of the implementation of such a policy in the French *Éducation nationale*, see (Dieguez *et al.* 2016).

<sup>2</sup> See also the Facebook page “Easy conspiracy to shine in society” (<https://www.facebook.com/EasyConspiracies/>)

<sup>3</sup> But see Wood 2016, who shows that nowadays characterising a view as a CT is, on the average, not detrimental to its acceptance and diffusion.

sense of the world for particular agents, and therefore as complex intellectual productions that may be valuable for their supporters, and that call for further analysis (e.g. Raab *et al.* 2013).

The spread of some conspiracy theories, promoting anti-scientific views, as well as systematic mistrust towards any official or consensual information source, clearly is a societal and political problem, which needs to be fought (Douglas *et al.* 2015). Inversely, when the leaders or the government of a country endorse and promote one or several conspiracy theories, this clearly constitutes a problem for democracy and free speech. Academic efforts to understand conspiracy beliefs are thus undoubtedly needed. Some research is now developing, in various disciplines. There exists a sociology of the spread of conspiracist beliefs (e.g. Sunstein and Vermeule 2008), a psychology of the conspiracist believer (e.g. Brotherton *et al.* 2013), and an epistemology of those beliefs (e.g. Keeley 1999). However, those research programmes are still fragmented, and interdisciplinary dialogue, which seems particularly desirable for such a topic, is still rare.

Taking a step back, our overall goal in this paper is to clarify some preliminary conditions for a fruitful, integrated interdisciplinary study of conspiracy theories. We question the double assumption that the object ‘conspiracy theories’ is a clearly delineated one, and that academic discourse thereabout can be unified and coherent. At least two main questions need to be addressed: First, does conspiracy theorising constitute a specific object, or is it rather a particular aspect of a more general cognitive tendency? Second, does it correspond to a unified reality, or is it rather an umbrella term for different types of thought tendencies that have little, if anything, in common? After a route through several aspects of those questions, our conclusion will be rather sceptical regarding the philosophical consistency of the notion, and our main recommendation will be that any approach to what is usually labelled “conspiracy theorising” should pay much attention to the contexts in which such ideations emerge, either for studying the psychology of believers, or for assessing the epistemology of such theorising.

In section 2, we will address the problem of the remarkable diversity of what is labelled “conspiracy theories” (hereafter “CTs”): the 9/11 supposed Mossad-CIA conspiracy, the supposedly fake moon-landing, the recent mass shootings viewed as hoaxes, the autism-vaccine link theory, fake Paul or chemtrails theories, do not seem to share more than an explanatory appeal to a hidden group of conspirators. As a way to clarify the landscape of CTs, we will sketch five distinctions along which to classify them.

Section 3 will focus on a particularly important subclass of CTs, namely those of anti-scientific spirit, which promote mistrusting institutional science. Such focus is motivated by several (somewhat unrelated) reasons, the main of which being that, as philosophers of science, anti-science views are the ones to which we are the more acquainted, and sensitive;<sup>4</sup> those views have also a signif-

<sup>4</sup> Another notable reason is that, by taking scientists as their main targets, anti-science CTs raise in a particularly striking way the difficult problem of where to draw the boundary between healthy scepticism (which is supposed to be at the root of the scientific method) and social paranoia—unreasonable doubts. It is a hard task for scientists to defend scientific authority without exposing themselves to the criticism of betraying the scientific ideal of critical thinking and rational doubt. But those questions are beyond the scope of this

icant detrimental impact on society (think e.g. of climate denial and vaccine-autism theories, see Douglas *et al.* 2015). This analysis will lead us to highlight that the boundary between social critique of science on the one hand, and conspiracy theorising on the other hand, as easy to draw as it may seem, is rather fuzzy.

Section 4 will then focus on the very appellation of “conspiracy theories”, and emphasise that this label should not be taken too seriously by epistemologists, especially not as a tool to demarcate CTs as *bad* theories. Section 5 will then analyse a crucial divide regarding rationality in conspiracist thinking, which concerns both psychology and philosophy. Finally section 6 considers again science-focused CTs, and argues in favour of a politically and socially contextualised approach to rationality over a scheme focused on abstract individual believers.

## 2. Mapping Conspiracy Theories—A Tentative Typology

Many different discourses are called “conspiracy theories”. It is not clear whether this apparently heterogeneous class of things actually constitutes one kind of object. If not, this would be problematic for any attempt at providing an account of conspiracy theories as such. Even though the focus of any study is generally a set of objects, there exists an overarching principle to justify the grouping; and reciprocally, this plurality is generally dividable along some axes.

Some CTs appeal to evil groups of people (e.g. the Illuminati, chemtrails or Reptilians theories), some CTs intend to show that established truths (e.g. the benefits of vaccines, genocides, anthropogenic climate change) are based on a hidden lie, while others are just claiming that the world as it appears is partly a hoax (e.g. fake Paul, fake moon-landing theories). Quite often, those CTs are grouped within the same kind of thought tendencies that underlie creationism, climate change denial, or science denial in general, as well as Holocaust denial. Some sociologists and psychologists have studied the odds that believers in those views would also hold conspiracy theories or score high in what they measure as the intensity of their “conspiracies ideation” (Brotherton and French 2015), or on the scale of conspiracist mentality that they designed (Brotherton *et al.* 2013, Bruder *et al.* 2013)—and the scores are quite high indeed.

However, what justifies calling “CTs” hypotheses as diverse as those about who killed Lady Di, the negation of the Connecticut massacre, or the Reptilians fantasy (according to which important characters of History are secretly dinosaurs), is less clear. If CTs constitute a ‘natural kind’, then it should be proven. Granted, those views could be just a gerrymandering assemblage of fantasies; but then, what sense would a study (whether psychological, philosophical, or sociological) of such views make? If the main motivation for such a study consists of pragmatic reasons (e.g., those views are dangerous for democracy), then it should be made explicit, and a justification of the assemblage (why this one rather than another one?) should be given from this pragmatic perspective. On the other hand, if the objects of the collection are supposed to belong to distinct natural kinds or species, possibly falling under a natural kind of a higher level, then, no species or natural kinds in the collection should be omitted. We will argue that this is not easy to show in the case of CTs. But to start with, let us try to bring some order

into the diversity of the CTs studied in the literature, hoping that this might contribute to finding either unifying criteria or overarching concepts.

A first way to navigate this galaxy is to sketch a typology. We propose five distinctions:

**General vs specific.** Some CTs have a very wide scope, and are likely to explain everything (the theory according to which Illuminati rule the world exemplifies this). Others are concerned only with one specific event (e.g. Kennedy's assassination, 9/11)—even though as a consequence of the former, some “local” CTs can be deduced from more encompassing ones (i.e. the Illuminati killed lady Di).<sup>5</sup>

**Scientific vs non-scientific.** Some CTs are relative to science (e.g. vaccination creates autism but we are kept ignorant of the research about that; climate change is an invention of ecologists who want to deprive us from the pleasure of driving cars, etc.). Others are unrelated to science (e.g. Fake Paul, fake moon-landing, 9/11 as a “false flag” operation).

**Ideological vs neutral.** Some CTs are ideologically strong—for instance, the various supposed Jewish plots (Jewish Bolshevism, Judeo-Masonry) or the fear of a communist conspiracy that pervaded McCarthyist America, as famously analysed by Hofstadter (1964). Others are not (e.g. the Illuminatis are not described as a specific racial or political human group; neither is Fake Paul).

**Official vs anti-institutional.** Some CTs are official ones (e.g. McCarthyism anti-communist paranoia, or the propaganda about capitalist spies in Soviet Union). Others are explicitly denying the facts that are hold true by the regime (e.g. theories about the supposedly fake bombings in the US, 9/11 “truthers” allegations, theories about lady Di's death).

**Alternative explanations vs denials.** Some CTs claim that those responsible of some events or human history are not the ones we usually think (9/11 “truthers” theories, Illuminati theory), without denying that the events in question took place. Others more radically claim that those events (e.g. the 2015 terrorist killings in France, the Boston marathon killing) never happened.

This classification, which is probably not exhaustive, tries to bring some order into the patent diversity of CTs. However, beyond this diversity, all those views seem to have something in common, which could be captured by Aaronovitch's (2009) characterisation of CTs. According to him, a CT is an explanation of an event or of an event type that unnecessarily appeals to the hypothesis of a group of malevolent agents that remains hidden.

The last specification (about the conspirators' remaining hidden) acknowledges the crucial fact that CTs do not concern conspirators who expose themselves when their operation is achieved, like terrorists.<sup>6</sup> Based on Aaronovitch's characterisation, which we may take as a provisory account of what unifies all

<sup>5</sup> Such theory is exposed on <https://www.davidicke.com/>

<sup>6</sup> The specification about the agents' “malevolence” does not imply, of course, that there exists no conspiracies where conspirators have good intentions (such as freedom fighters conspiring to assassinate the dictator). But one would not call a “conspiracy theorist” someone suspecting (and maybe hoping!) that there is such a secret plot going on, even though his suspicions are mistaken (unless he is the dictator himself, in which case the imaginary conspirators are indeed, from his point of view, malevolent!). Thanks to Juha Räikkä for urging us to clarify this point.

those discourses, we can suppose that CTs can be partitioned into our 5-fold distinction above, according to what the *explanandum* is (its generality; its relation to science), *who* the alleged conspirators are (whether their identity is ideologically laden or not), and *who spreads the belief* (government vs people).

However, the following questions remain to be addressed: according to what criteria, and from what perspective, can one judge that such an appeal is “unnecessary”? (is it empirically false? is there a better explanation?—is it just wrong, or irrational?) In the next section, we will address some of these questions by focusing on one kind of CTs identified above, namely the ones that concern science.

### 3. Where Is the Boundary Between Undue Scepticism toward Science and Rational Social Critique of Science?

There is a special kind of CTs that are rooted on a mistrust of institutional science, and may therefore evolve into (institutional) science denialism (Lewandowsky *et al.* 2013). Some social psychologists have shown that believers of CTs are more likely than others to be attracted to alternative medicines, vaccination rejection, and other discourses or attitudes that are averse to current science and scientific institutions, for different reasons. Sometimes, what is at stake is not a very elaborated CT, but just a distrust regarding authorities in general (governments and the media), and especially scientific authorities. In this section, we will focus on these views, as a particularly important kind of CTs (both quantitatively, and as a threat to democracy). Our main point will be to highlight how difficult it can be to draw a clear-cut boundary between such an undue scepticism towards science and other, rationally grounded, critical views about science.

#### 3.1 Alternative Science and Anti-Science Views

A first thing to note is that many elaborated CTs are not distrusting science in general, but rather target current “official” scientists and intend to replace them by their own, alternative “experts”. This is quite different from a general anti-scientific, anti-rationalist, ‘sentimentalist’ attitude, which is less closely tied to conspiracist worldviews. Consider climate change denial. It often goes hand in hand with embracing rather technophile and science-friendly views (especially regarding nuclear energy and fracking). Climate change denial, in its most general form, includes a CT, namely the fact that scientists consciously lie about global warming and the perils of industry, for example in order to please environmentalists.

Thus, one could easily argue that a more detailed analysis of (anti-science) CTs should partition their set into two groups. The first one consists of environmentalism-friendly populations, which for instance would be more attracted to anti-vaccines CTs, or to alternative medicine, and despise modern science on the grounds of its supposed lack of human values. Such CTs mostly consider that official science is being pervaded by capitalistic forces and interests. They therefore aspire to a different kind of science, possibly more holistic and anti-Western. Alternatively, they may support other, non-institutional experts, who appeal to the same standards of scientific method as official science, but have supposedly been marginalised and deprived from any funding and institutional position because of their anti-conformist views.

The second group consists of more right-wing (or, in the US, Republican) populations, who do not share those critical views of modern science as in-human, but rather fear the anti-growth consequences of the findings about climate science and ecology, and therefore design or believe CTs about institutional science in order to rationalise those fears.

Having highlighted that, the main point we want to make is that it is a hard task to tell exactly where the domain of CTs start within the set of critical views about science. One of the major arguments given by people who support anti-vaccination theories, for instance, is that scientific information available to the public is ultimately driven by labs that are themselves funded by firms. Big Pharma has a major interest in selling us drugs, especially vaccines, which prompts them to lie about the risks of their products—first of all vaccines. The point here is not to show that such argument is misguided; our concern is rather that the relations between scientific activity and money funding is something not easy to disparage. We will show this first by successively considering four examples.

### 3.2. CT and Social Critique of Science: a Continuum?

**Fat and sugar.** Consider a recent controversy: fat and sugars are bad for health if consumed in small excess. We have known for a long time that fat should be avoided, and some policies have been implemented to prevent populations from over-consuming it. However, it recently turned out that sugar is bad too, and might even be worse, but that scientists from physiology or molecular biology labs in the 60s and 70s had been encouraged to underestimate the negative impacts of sugars, therefore overemphasising the compared dangers of fat (Taubes 2016). Fast food or soda companies, which sell products that are highly loaded in sugar, were first among the funders of this kind of research.

Is this a conspiracy? The *Guardian* article (by Ian Leslie) that extensively reviewed the case is entitled ‘The sugar conspiracy’.<sup>7</sup> To some extent, it may not be irrational, indeed, to speak of a conspiracy—at least a conspiracy of silence. Indeed, a group of hidden agents deliberately increased their benefits by means detrimental to the population. And, like in many conspiracies, a lie about the real or the most important culprit (here, sugar rather than fat) has been instilled into the public.

When we now consider science in general, past this specific example, and more particularly sciences whose findings have some indirect impinging upon social issues (e.g. geosciences, chemistry, genetics), we witness analogous features regarding funding. “Merchants of doubts”, as portrayed by Oreskes and Conway (2010), were deliberately harmful, but they rightly established some facts about industrial pollution; the problem is that they willingly misportrayed the ratio between the damages pollution creates, and the ones caused by tobacco. What invalidates their research as science worthy of the name is the frame in which it was elaborated, and the way it was presented—namely, confronting research on air pollution to findings about passive tobacco consumption, while the question of the relative causal weight of each was not satisfactorily addressed.

<sup>7</sup> <https://www.theguardian.com/society/2016/apr/07/the-sugar-conspiracy-robert-lustig-john-yudkin>

**Climate science.** Most of the scientists who deny either climate change, or, mostly, the anthropic cause of climate change, are not themselves climate scientists (i.e., experts in the sciences directly involved in the study of climate change, such as ecology, geochemistry, or paleoclimatology). Rather, they often are geologists.<sup>8</sup> But geology, as a science, is massively funded by firms linked to oil economy, because oil exploitation obviously requires some geological knowledge.

Of course, it is a far cry between such statement and claiming that there is a conspiracy of oil companies to counter climate science and diffuse a pro-fossil energies discourse into the public. However, let us now look at another quite controversial issue, namely the one concerning GMOs and their various risks.

**GMOs.** Here, things are interestingly differing across countries. In the US, for instance, distrust regarding GMOs is considered as an instance of irrational, anti-science, stance, and Rational Wiki lists it along with anti-vaccination creeds and creationism (<http://rationalwiki.org/wiki>). In France, GMOs are not uncontroversially a scientific achievement, and many scientists doubt the virtues of GMOs.<sup>9</sup>

Considering who those scientists are, they appear as partitioned into two distinct groups. Most *molecular biologists* are in favour of GMOs, and deny that there is any substantial risk, pointing to a mass of studies that never detected risks for human health above the threshold required for food products in general (Key *et al.* 2008, American Medical Association 2012). They often make the well warranted claim that many non GMO-foods are problematic (e.g. regarding the excessive pesticides used for crops), hence that GMOs are not by themselves risky foods.

Inversely, many *ecologists* are cautious with regards to GMOs, some of them leading huge contestations regarding their extensive use (Bonneuil 2006). They often highlight ecological risks (i.e. pervasiveness, diffusion over large landscapes, high competitive power that may turn GMO seeds into invasive species, and subsequent loss of biodiversity). Once biodiversity decreases, seeds are so to say less evolvable and more vulnerable to environmental change (which is indeed occurring quickly because of climate change). That creates uncertainty regarding future crops, leading to possible famines, drops in stocks and market values, and finally risks for terms of population health.

This situation is interesting because private R&D that funds some research in molecular biology comes from firms that indeed develop biotechnologies, hence often GMOs (Guillemaud *et al.* 2016, about Bt crops, namely, maize or other plants modified by *Bacilla thuringiensis* as a protection against herbivore insects).<sup>10</sup> In turn, such funding are not the ones supporting ecologists (who may

<sup>8</sup> The case of Claude Allègre, a major geologist and former French minister of Education turned into the most famous climate denier in France, provides an excellent illustration of this point (Allègre 2012—which includes a nice conspiracy theory about how two NASA researchers invented the ‘myth’ of climate change, by tweaking their data, in order not to lose their funding).

<sup>9</sup> An important *PlosOne* study showing that about 40% of publications concerning GMOs are affected by conflicts of interest, and vindicate position generally favourable to the modified seeds’ industries, is due to ecologists working at the French institute of Agronomy (INRA) (Guillemaud *et al.* 2016).

<sup>10</sup> Another interesting result of the study is that at the scale of an individual researcher, the publications tend to be more favourable to the GMOs when there is some funding from such a firm.



themselves have contracts with agronomy firms). Hence, the sources of funding seem to some extent to be predictive of the positions of the scientists regarding the ecological or health risks of GMOs.

To be clear, we are not advocating a conspiracist view of science. But what we have just highlighted raises a problem for the clearest available defence of science against science denialism and expert distrust, namely, an appeal to the Mertonian view of science. According to it, science as a social system is oriented towards the production of truth, even in the absence of good will or probity of its agents (in particular because claims, in order to be validated, have to undergo a harsh process of testing via criticism by others whose interest is precisely the demolition of such claims, see Bouchard 2016). Yet witnessing systematic biases due to research funding, irrespective of what in fine is the “objective truth” about GMOs, makes it harder to say that the result of science is reliable because of the orientation of the whole system towards producing objective claims about the world.

Note that the Mertonian defence is very good at stating that biased research works are not the norm in such a system. But this holds for specific programmes on one topic: if one designs the probability distribution of biases among particular research programmes, the highly biased results will be the tail of the distribution, and there will be a peak on lightly biased results. However, the GMO issue is not about how much one specific research programme is biased, but about a bias pattern across a lot of different research programmes (in ecology, biology, etc.), and this may be compatible with the Mertonian defence. Such defence indeed leaves a room for the idea that various goals and values are involved within scientific research programmes, and in our case one might argue that the two stances regarding GMOs are correlated to two distinct sets of values: ecological conservation concerns on the one hand, agricultural productivity in the face of current human overpopulation on the other. But our critique here highlights the fact that those values and goals align with funding biases, whatever the validity and reliability of each scientific judgement *per se*.<sup>11</sup>

The issue with science-focused CTs is thus the following. One can never, or hardly, know whether molecular biologists advocating GMOs have been bought by Monsanto & Co. But it is not even necessary to assume so in order to highlight the effects of funding on the distribution of scientists’ commitments regarding social issues connected to their work. For this reason, we claim, it is still rational *not* to think that scientists have been corrupted. After all, the subjective attitudes of scientists are not really at stake here, provided that in the end the results of the ‘conspiracy’ are the same, namely, a bias in the claims that they support.

Referring to the characterisation of a CT as an unnecessary appeal to a hidden group of malevolent agents, it turns out that it is not clear here who the group of malevolent agents would be. Are the conspirators the scientists themselves, or the people funding them and orienting research? And should the subtle social criticism pointing out the gradient in funding biases be lumped with crude CTs like

<sup>11</sup> The situation here somehow parallels the status of the press in democracies: freedom of expression creates a world where one could rationally expect that all information is available, and all claims and political propositions openly criticised. However, other mechanisms due to the capitalist economy of information and infotainment favour oligopolies which undoubtedly threatens the plurality and openness of the press, as well as the freedom-of-speech of journalists (this is the case in many European countries and the US).

the ones that see climate science as the emanation of a specific plot against humanity? More seriously, all this does not lead to the idea that science is a conspiracy driven by capitalists. But it shows that the boundary between a conspiracist view of science and a critical view of what science says regarding many hot topics is not as sharp as we would expect or hope.

This actually mirrors the relation between conspiracy theory and sociology, and the fact that they may seem very close to each other—a historical and conceptual stricture analysed in Boltanski’s *Enigmes et complots* (Boltanski 2012). This consideration may provide some criteria to sort out CTs from (sound) critics of science: there are bad and sound theories, and sociology is a good theory, while CT is its spurious shadow.

So apparently the option left here in order to draw a boundary between social critique (of science) and CT, and then between CT in general and rational critique, is to epistemologically assess the value of the ‘theory’ in both cases. However, the following section will criticise this approach.

#### 4. Conspiracy Theories Are (Generally) not Theories

The previous section, focusing on CTs that are concerned with science, has shed some doubt not only on the unicity of the class of things usually called ‘CTs’, but also on the very existence of a clear-cut boundary between CTs and rational critique. We have just suggested that there may be a way to clarify this boundary, which would consist in treating the problem as what philosophers of science since Popper call a “demarcation problem”. Here the idea would be that there exists a demarcation criterion that divides the sets of theories appealing to a conspiracy between proper ones and ill-formed ones, and all so-called ‘CTs’ fall into the second category. We could demarcate them on a case by case basis, by assessing the epistemological value of the theories at stake: in this perspective, conspiracy theories, as opposed to good rational critique, would just be bad theories. This section criticises such strategy.

##### 4.1. An Epistemological Approach: CTs are Bad Theories

From a critical point of view, one way to approach the issue of CTs is to assess their epistemological value in the light of the standards of scientific theories. From this perspective, it should be easy to show that, most of the time, CTs do not satisfy the several criteria that a proper scientific theory should meet: empirical confirmation, predictive fruitfulness, unification, simplicity, explanatory power, among others. CTs appeal to *ad hoc* hypotheses that often make them unfalsifiable for whoever endorses these hypotheses. In fact, those various failures to meet the standards for scientific theories can be thought of as alternative exemplifications of the “unnecessary” character of their appeal to a group of hidden agents—to a conspiracy—as highlighted by Aaronovitch’s characterisation.<sup>12</sup> This might mean that what differentiates a good explanation appealing to a hidden plot from a proper conspiracy theory is that the latter is on the wrong side of the demarcation criterion, whatever its definition. Just like metaphysical theories according to Duhem (1906), CTs appeal to unobservable entities whose role is unnecessary. And

<sup>12</sup> In a Popperian manner, falsifiability has been indeed proposed as a criterion for good theories, which is violated by such appeals to hidden groups of agents (Bronner 2013).

just like pseudoscientific theories according to Popper (1962), such appeal and its unlimited explanatory power make them unfalsifiable.

Hence, one way to debunk CTs would be to consider them seriously, and to carefully analyse them, case by case, in order to exhibit their shortcomings. However, for several reasons, this stance is not very fruitful, we believe.

#### 4.2. Non-specificity

First of all, this type of criticism can be made to many theories that are by no way CTs. As philosophers of science have long acknowledged, theories are, most often, underdetermined by the data (Duhem, 1906, Kuhn, 1962, Quine 1975). That implies that it is always possible, at least in principle, to come up with an alternative explanation of a domain of phenomena that is already covered by a given theory. That also implies that whether, and to what extent, a given set of empirical data confirms a given hypothesis, is open to debate. Scientific controversies among advocates of rival theories appeal to various criteria, beside empirical confirmation (Kuhn 1977, 1983, Hempel 1983, Thagard 1978, Van Fraassen 1980).

Taking seriously conspiracy theories, one can certainly enter into a debate with their advocates, in terms of theoretical values (such as simplicity, explanatory power, unification power, or aesthetic appeal). But this is by no way specific to conspiracy theories.<sup>13</sup> That would probably enable us to make explicit to which regard they are bad theories—but just like other bad theories. So this does not allow us to solve our problem of drawing a clear-cut line between conspiracy theories and rational critique, which appeared acute when considering science-focused CTs.

We are left with no clear definition of conspiracy theories still, and no clear epistemological criteria to classify a given set of hypotheses as a conspiracy theory. The appeal to a hidden group of malevolent agents seems to be, as we have already emphasised, the only feature the variety of objects called CTs have in common. However, just highlighting the fact that the appeal to a group of malevolent agents is “unnecessary” (in the case of conspiracy theories as opposed to cases of real conspiracy unveiling) is not enough: what seems unnecessary to us might well be considered as fundamental for someone else, so one will need another criterion to demarcate unnecessary hypotheses, which leads to infinite regress. What common parlance seems ultimately to refer to by “conspiracy theorising” is rather the assumption that things are not what they appear to be, and that they appear so in virtue of some powerful group of people’s bad intentions. This highly unwarranted speculation is exactly what the term “theory” in the phrase “conspiracy theory” refers to, as we will now see.

#### 4.3. Confusion Due to a Flaw in our Lexicon

As philosophers of science and scientists know too well, the word “theory” suffers from strong ambiguity. While theories are considered the most remarkable achievements of scientific thinking, the phrase “it’s just a theory” rather means the exact opposite to what scientists—and philosophers of science—mean when they use the term “theory” to name a set of hypotheses. Scientific theories do not

<sup>13</sup> Moreover, virtues such as explanatory power or simplicity are arguably contextual and perspective-dependent, as they depend, among other things, on what one’s fundamental hypotheses are (see section 6).

deserve this name until they have passed strict tests of empirical confirmation, of logical consistency, and of conceptual significance. Their core concepts must at the same time have a clear and operational definition, and be rich and complex enough to allow for conceptual development and predictive fruitfulness.

To be sure, most conspiracy theories would not pass this test.<sup>14</sup> But why would they? And why should we bother showing that they do not? Following such a path—in addition to not allowing us to clearly distinguish conspiracy theories from bad theories—would just be taking much too seriously the word “theory”. The phrase “conspiracy theory” by no way suggests that the ideations so designated are theories in any scientific and philosophical sense. It is not the advocates of CTs who call their ideations “theories”, but rather their detractors. Hence, the word “theory”, here, is clearly used in its pejorative sense: it means that these are highly unwarranted, and speculative constructs. All we can do is regret that this use of the term “theory” is becoming so widespread—and maybe stop using it, because it somehow gives credit to this anti-scientific use of the word.

Let us take a few steps back. As we have emphasized from the beginning, talking of conspiracy theories is extremely widespread. Everyone talks of conspiracy theories, makes fun of them, etc. In other words, this is a ‘trendy’ topic. This is a good thing in a way, because this makes research about them easy to communicate to the public—at least easier than research on scientific theories. It is rather an easy task to explain to the non-specialists why CTs call for an epistemological, psychological, and sociological study.

Although it might be a good thing to call our object by the same name as it is called in everyday language—just not to withdraw in our academic ivory tower—we should also beware of not being victim of a naive (double) illusion, namely that 1. There exists a class of things corresponding to what common parlance calls “conspiracy theories”,<sup>15</sup> and that 2. Conspiracy theories are theories, and should be analysed as such, in order to be shown to be bad theories. And, if we want to be consistent, we should probably give up this phrase altogether, just not to contribute to the use of the word ‘theory’ in its pejorative sense.

Psychologists who argue that we should talk in terms of “conspiracist worldview” or “conspiracy mentality” might thus be better inspired (e.g. Dagnall *et al.* 2015; Leman and Cinnirella 2013). Their major argument is the well documented fact that believers in one CT are highly likely to believe in many others independent CTs. However, this does not mean that looking at conspiracy theories on a case by case basis—rather than considering the conspiracy worldview tendency as a whole—is uninteresting. What we want to argue for is that this should be done by taking the believers’ perspective, rather than focusing on the

<sup>14</sup> Furthermore, although it might be true that some of them (e.g. some versions of the 9/11 conspiracy) are rather sophisticated constructs (see Raab *et al.* 2013, which addresses them as narratives, conducting to some interesting self-knowledge), in many cases, they just consist in formulating a simplistic hypothesis that is taken as a universal explanation. For instance, the hypothesis that pharmaceutical laboratories have financial interests that lead them to fund research only if it supports their interest, and that they have influential relations with political decision-makers is, to say the least, a quite easy to come with (and simple) hypothesis. Nothing here is akin to the conceptual richness and logical complexity of the genuinescientific theories philosophers of science have been dealing with, and elaborated their tools of analysis for.

<sup>15</sup> In this respect, knowing what people mean by “theory” is indeed relevant to the issue of the unity of CTs (thanks to an anonymous reviewer for raising this point).

theoretical construct per se independently from the reasons agents may have to hold it.

We should study *beliefs* in conspiracist constructs, rather than study these constructs *in abstracto*. From this perspective, epistemology and psychology should go hand in hand. Yet if we consider extant approaches, it is not obvious that such integration can be easy. Considering such possible unity is the object of the next section, where we will show that a principled divide affects psychological and epistemological approaches to CTs.

### 5. Are Conspiracist Beliefs Wrong, or Irrational? A Crucial Divide

Even though we contest their use of the label “theory”, many approaches to conspiracist beliefs have been elaborated, whose lessons are still worthy of consideration. Sociological or political ones consider the reasons of the spreading of those theories, their recent flourishing or the causes of their social distributions (Hofstadter 1964; Sunstein and Vermeule 2008; Billig 1987; Wood 2013; Byford 2014; Van Prooijen *et al.* 2015). Psychological ones study the causes why some individuals are believing in one or many of those theories (Brotherton and French 2015; Bruder *et al.* 2013; Dagnall *et al.* 2015; Bilewicz *et al.* 2015; Goertzel 1994). And finally, epistemological ones attempt to characterise what is utterly flawed in those theories (Keeley 1999, Cassam 2015).

Those enquiries—whose number increased noticeably after 2001—gathered an interesting body of knowledge about the causes of the spread of conspiracy ideations, the personalities of whoever believes in them, as well as the correlation between social (political attitudes, mistrust towards authorities) or psychological features (paranoid tendencies, Darwin *et al.* 2011; need for cognitive closures, Leman and Cinnirella 2013) on the one hand, and the probability of believing in CTs on the other.<sup>16</sup> The ties between CTs and political extremism (Van Prooijen *et al.* 2015) or mistrust (Hofstadter 1964) as well as the role played by agents’ need for cognitive closure are indeed well established now. The role of the structure of available information has been pointed out, together with the way it is amplified by the easily achieved polarisation of opinions on the Internet. Sunstein and Vermeule (2008) speak of a “crippled epistemology”, which supposedly increases the chance that people will adopt a CT, especially by providing easy affordances for a confirmation bias to select information and process it in a way that more and more moves away from reality. More generally, psychological research has unravelled the role played by in-built cognitive biases and heuristics in agents’ acceptance of CTs: intentionalist bias (disposition to causally ascribe effects to human agents, Brotherton *et al.* 2013), assumption that large-sized effects require important causes (Leman and Cinnirella 2007), biases about the assessment of randomness, among other things.

However, those avenues of research, when better examined, do not pertain all to the same approaches and may ultimately conflict. Indeed, they essentially disagree on whether one should assume the *irrationality* of conspiracist views or rather consider that CTs are just *wrong* statements resulting from *rational* operations.

<sup>16</sup> Hereafter, we will be using the label “CT” to refer to any conspiracist hypothesis or ideation.

Some of those approaches, indeed, track the failures of reasoning involved in adopting a conspiracy theory. Those failures may express a systematic disposition to fail—such as cognitive biases—and in this case CTs are interesting pathological examples that display in a sort of magnified way the structure of our cognitive system. That is somehow what psychologists like Goertzel (1994) and Leman and Cinnirella (2007, 2013), or philosophers like Quassim Cassam (2015), have in common. Their approaches ultimately assume that there is something irreducibly irrational in adopting, believing in, or construing a CT. Then, analysing specific CTs and the sociological and psychological structures that favour their elaboration or adoption sheds light on specific psychological or cognitive structures that either impede, or bias, the proper deployment of rational faculties.

Yet there exists another approach, in the psychology of reasoning, that tends to disavow the appeal to the notions of epistemic or cognitive bias (see Hahn and Harris 2014). It rather consists in assuming that rationality, as a specific way to forge and adopt belief, and make decisions on the basis of available information (such information being acquired in a specific social context that may also contribute to the adoption of a set of preferences), is at work even in the case of people choosing what appears to us as utterly irrational views. As illustrates a Bayesian approach (see Olsson 2013, Cook and Lewandowsky 2016), we can make sense of belief polarisation—and other apparently irrational tendencies that are usually accounted for in terms of systematic biases—by granting that agents are Bayesian reasoners and decision-makers. Considering their priors (as inputs to the Bayesian computation of a decision regarding adoption or not a specific stance), as well as the characteristics of the social environment in which they live, which will dictate the available information and the routines to assess evidence, one could thus account for the adoption of a given CT as the result of a purely rational process (Koed Madsen *et al.*, under review, have recently designed an agent-based model showing that large networks increase the potential for conspiratorial thinking, even amongst Bayesian agents).

This approach contrasts with the former, not only because of the Bayesian methodology, but more generally, because on a disagreement regarding the general idea of CT that is at stake—a situated rational production *versus* a failure of rationality. Of course the approach here is not proper to CT, it allows a general theory of the distribution of false beliefs and their spreading in specific areas of societies—as well as possibly, tips for making them less socially salient. Because the CTs believers are still rational, changing their priors as well as the way information is distributed to them might change their assessments and then the prevalence of CTs in general.<sup>17</sup>

None here would vindicate CTs. But whereas the second approach sees them as false beliefs or systems rationally produced, the former would rather treat them

<sup>17</sup> To some extent this divide echoes the debates generated 20 years ago by the reception of the results by Kahneman and Tversky (1974) about generalised flaws in probability reasoning or basic deductions. Whereas some, like Stich (1990), wanted to give up the characterisation of human mind as a rational system, others would modify the very notion of rationality, arguing that in the ecological or evolutionary contexts in which this human reason lives and evolves, its prestations can be considered as quite rational strategies (Gigerenzer *et al.* 1999).

as irrational, not considering them along the true/false dichotomy. This distinction between “being false” and “being irrational” is therefore not just a semantic detail, it dictates various methodologies to explain the phenomenon of CTs.

Actually, one consequence of the second option, namely, viewing CTs as wrong outcomes of some rational decision-making process, is that there might be some epistemic interest in CTs, as a sort of approximation to the truth (see for instance Raab *et al.* 2013, which is interestingly entitled “Thirty nuances of truth”). Some claim that, most often, those who adopt a given CT intend to capture a situation of political domination, but wrongly identify the culprits (e.g. Goertzel 2004). Such a CT—for instance, that the white power in the US deliberately waited for installing protections after the Katrina hurricane in New Orleans, which led to the deaths of many poor black families—may be, even if this is a false explanation, one of the best available explanations, to the extent that it correctly captures something of the state of exploitation of a part of the population. When Spike Lee shot *Katrina (When the Levees broke)*, his documentary movie about Katrina, a priest talked about this idea that the ravages due to Katrina resulted from a deliberate attempt by the Whites to get rid of much of the black population: as he said, this may be untrue, but there is something true about the state of those black people.<sup>18</sup> In this case indeed, the believers in this CT are not so irrational: they lack some relevant information, so that they cannot really grasp what is going on, but their rational capacities still allow them to formulate an explanation that is partly true because it correctly captures something of the domination of the Blacks by the Whites (the counterfactual “if those people had been White they wouldn’t have been so neglected, and then died” does not seem intuitively to be fully wrong...). The fact that even people with low access to many facts (and poor education, often) are likely to capture, even in a deformed manner, something of their true social situation, should be explained by the fact that they are rational beings. Given their prior about their state of exploitation, as well as the limited information they have, the best explanation from their perspective might indeed be the abovementioned hypothesis—even if we know it is factually wrong.

So even though at first stake all the studies on CTs from epistemology, social psychology and sociology may seem to be integrable, there is a deep theoretical divide between appeal to epistemic vices or cognitive biases on the one hand, and assumption of rationality in poorly truth-conducive contexts on the other hand. The last section will tackle the issue of the proper role of the assumption of rationality in CT studies by considering once again science-focused CTs, in which the despise of rationality seems at first stake the highest because science itself is a paradigm of rational thinking.

## 6. What Is Problematic With an Appeal to Standards of Rationality—the Case of Science-Focused CTs (again)

The problem for who philosophises about CTs is therefore the following: we start by taking a set of views that we characterise as conspiracy theories because of their unnecessary explanatory appeal to a group of malevolent agents. However,

<sup>18</sup> “The fact that so many Black residents believe that the levees have been deliberately destroyed is a result of their historical experience and of their constant feeling that their safety and well-being are sacrificed” (quoted in Aaronovitch 2009).

the subset of CTs that are related to science does not seem to be sharply distinguished from critical views about science that sociologically-oriented critiques may develop (section 3). Then, we may want to capture the reason why they are either irrational or wrong, by specifying a proper epistemic flaw that those theories display. Yet it turned out that those are not exactly theories (section 4). To say the least, the *conspirationism / rational-criticism boundary* is vague; there is rather a continuum from the realisation that science is partly value-driven to the idea of a fully intentional conspiracy involving scientists' collective and conscious lies (a continuum which of course allows for cases that are clearly different, on each side of the very vague boundary). And the psychology and sociology of CT is not of much help here, because it is divided between approaches starting from the idea that CTs have a specific rationality (and trying to uncovering it), thus assuming that their irrational appearance stems from the conditions in which rationality is enacted—and approaches that describe them as irrational and ask why people believe irrational things, or irrationally believe things. Is this a fatal blow against any attempt to philosophically define and understand science-focused CTs and CTs in general? Below, we develop two arguments to assess the prospects for a philosophical critique of CTs. We consider once again science-focused CTs, because they may be the type of CTs where those problems are the most acute.

### 6.1. A Question of Grain

Some of our difficulties here can be traced back to a grain issue; namely, when tackled with enough generality, many social phenomena can appear as conspiracies. Consider a recent poll, run in France: when asked the question “do you feel that someone unknown pulls the strings?”, 71% of the people answer “yes”. This has been interpreted as, ‘two thirds of the population are conspiracist’ (Gombin 2013). But such analysis must be dismissed, for the following obvious reasons.

Basic social facts can indeed be formulated in this very vague way: some people—e.g. rich people, the media, celebrities or politicians—have more power than others to influence others' lives; they may often act in a secret way in order to ensure the efficiency of what they do, especially where their interests do not align with those of a group of people. So the feeling that, as an ordinary citizen, I am not aware of who impacts on my existence and why, even though I feel that some people do, is not irrational; this is just the opaque perception of some basic social mechanisms. If *this* is a conspiracist ideation, then basic awareness of social structures is a CT, and the whole notion of CT becomes trivialised—therefore the label is not useful at all, and studies of CTs should be dissolved into general studies about social self-perception.

Thus, before calling some view ‘conspiracist’, one should be sure that it has been defined at the proper grain level. And this is what happens with science itself: a criticism based on awareness of social production of science may be seen as CT just because at a certain grain level, CTs and science-criticism similarly insist on the hidden mechanisms that yield the production of science in the scientific regime of “big science” and data driven science (Nowotny 2004; Schatz 2014), namely a regime where facts are numerous and the responsibility for their production relies on huge sets of individuals and require massive funding, hence political commitments to fund differentially A rather than B. But this identification is not useful, exactly like the conspiracist interpretation of the poll above mentioned, because it blurs the real content of what makes a view into a CT, namely,



the fine-grained characterization of the conspirators and their motives. Saying that someone “pulls the strings” is not advocating a CT; saying that Jews or Masons secretly conspire to diffuse AIDS is so. Similarly, pointing out funding biases in political stances taken by scientists is not conspiracy theorising, whereas it is so to claim that scientists support vaccines because they are paid to do so by Big Pharma in order to sell us poison. Fine-graining the proposition here makes it shift from a true and vague view to a precise and wrong one.

The hope now is that the continuum of views (between conspiracy and sociology of science, so to say) we were describing may sharpen once addressed at the proper grain level.

## 6.2. Contextualising Rationality

However, we fear that this is not enough to solve the problem. There is an empirical aspect of the continuum thesis, which should be addressed now.

From an epistemological viewpoint, once considered as a style of hypothesis-formulating—so, as a production *process*, not as a result (namely a set of propositions or a theory), the major flaw of CTs can be characterised in the following way. Where rational enquiry assumes at least implicitly a null hypothesis, which is the absence of conspiracy and an ordinary mix of chance, intentional actions, alignment of interests and unintended consequences, conspiracy theorists *invert* this methodology. Assessing the conspiracy hypothesis is analogous to assessing an alternative hypothesis with respect to a null hypothesis in science (e.g. Gotelli and Graves 1996), which often corresponds to “what would have been the case just by chance”.<sup>19</sup> This methodology avoids ascribing to the alternative hypothesis what indeed is due to chance, and then violating Occam’s Razor. But CTs start by assuming the conspiracy, and then look for evidence of it everywhere (which will be easily found). Only such a position of null hypothesis indeed explains why advocates of CTs start by dismissing large sets of evidence supporting the “received view” (as they call it), and continue by overemphasising light evidence in favour of their preferred stance (namely, “nothing happens by chance”). This difference in the choice of a null hypothesis, or in more general terms a default hypothesis, distinguishes what we could call a “conspiracist epistemology” from a scientific epistemology.

However, why should one choose the scientific, non-conspiracist epistemology?<sup>20</sup> Why is it rational *not* to assume from the start that conspiracies are going on, so that no evidence should be taken at face value? It seems that we face here the limits of *any a priori approach* focusing on the individual process of belief justifications. To make it clear, let us consider for instance what living in former USSR implied: reading the press and listening to politicians should have been done with

<sup>19</sup> Of course, there are many ways to understand what a “null hypothesis”, is, and many debates among scientists on this issue—theoretical ecology is hugely concerned by this kind of questions. See e.g. Connor and Simberloff 1979, and later on the controversies around the “neutral model” elaborated by Hubbell 2001, see Munoz and Huneman 2016. However, solving those issues is not crucial for our argument here.

<sup>20</sup> Huneman (2015) argued that parsimony, or more specifically minimised epistemic costs, ultimately justifies the preference for a scientific over a conspiracist epistemology. Although the present arguments, mitigating this preference in some empirical cases, supplement those ideas, it does not contradict them.

a complete lack of trust, because indeed all those discourses were lies—and malevolent lies because they were used to deprive people from their political freedom (among other niceties). The same thing could be said, plausibly, about contemporary North Korea.

For someone living in those regimes, it is *not* so irrational to start with the implicit assumption that conspiracy is all over the place. In other words, the decision over the null hypothesis, which seems to be an a priori issue, is indeed massively influenced by the empirical conditions of the context in which one lives.

Let's unpack this point. It is not a fact of very sophisticated social science that human beings sometimes conspire together to get some benefits. After all, it is often easier to get what one wants by having allies. Moreover, reaching one's goals, when this conflicts with some others' interests, is facilitated by acting secretly. Therefore, in human societies some conditions are indeed in general met for favouring conspiracies. Stock exchange is the purest example of this state of affair: huge benefits can be made by secretly dealing in advance to influence market prices and values, and as a consequence people are inclined to do this. What opposes this tendency is, first, the unreliability of interest alignments, which means that people often betray co-conspirators and reveal conspiracy—and second, the existence of socially institutionalised counterpowers or systems of sanction. For instance, conspiring behaviour at stock markets has a very high cost when it gets uncovered. In the political field, the press and the medias have an incentive in uncovering that politicians do conspire and cheat (such uncovering leading to extraordinary sales of newspapers), which of course counters the tendency for politicians to conspire; and so on. So even though there is an in-built tendency for conspiracy in societies, there is also an in-built system to counter it, which robustly impeaches the pro-conspiracy trends to pervade society. But we are talking here of democracies, understood at least as systems where there is a separation between powers. (This is what Montesquieu saw as the main condition for political freedom; we are talking of “democracy” in the sense of what Kant called “Republic”, not democracy understood first of all as a kind of regime.)

Thus, what justified the USSR citizen in privileging the conspiracist epistemology over the “scientific” epistemology<sup>21</sup> is ultimately the lack of those counter-powers and institutions in her own society; such a lack could be empirically documented, provided that she employed the method of rational enquiry.<sup>22</sup>

This last point obviously raises a threat of circularity. What if, could one object, the agent denies that, in France or the UK, we live in a democracy? After all, some very rational people think that way—for instance, appealing to the Marxist distinction between formal liberties and actual liberties, or other leftist

<sup>21</sup> The label “scientific epistemology”, as it should be clear from the context, does not refer to the epistemology of institutional science, but to a specific way of gathering and assessing evidence and building beliefs—which is actually mostly realised by science. We could have called it “rational epistemology”, but then we would have faced other ambiguity issues. Of course those remarks concern all putative CTs, and not just the science-focused or anti-science CTs.

<sup>22</sup> Quassim Cassam (2015) centres his conception of CTs on the notion of “enquiry”, rather than beliefs. We think that his approach is ultimately compatible with the views expressed in this paper.

critiques of domination. Therefore, for those people, the conspiracist epistemology would be perfectly justified; meaning that we have no way to rule out the conspiracist epistemology with those arguments.

The answer, here, consists in distinguishing a sort of meta-level within the analysis. Granted, once the political regime—France, or North Korea—has been diagnosed as democratic or non-democratic, then it is rational to adopt, or not, a scientific epistemology. But assessing *that a context is a democratic one*, i.e., that the external conditions for the scientific epistemology to be the right epistemology are met, should be done according to the scientific epistemology. In other words, *if* assessing evidence in the classical scientific way, taking as a null hypothesis the fact that things are what they claim to be, and that events mostly result from chance actions and public projects of people with un-aligned interests, the state of the world appears to be non-democratic (lacking counter powers and so on)—something like “I think I am living in North Korea!”—*then* adopting the conspiracist epistemology becomes rational for further enquiries.

Of course, an infinite regress is lurking under those arguments. The person in North Korea, given the information she has, might not find out that the country is non-democratic. Hence she would be justified in (wrongly) adopting the scientific epistemology. And inversely, why should I think that the information I have—in virtue of which I find out that counter-powers exist which reduce the incentives for conspiracy, and therefore adopt the scientific non-conspiracist epistemology—is satisfying and reliable? At this point it is rational, we assume, to rely on some proxies for democracy: pluralism in information, political pluralism, open controversies, etc. This is wholly empirical, and if someone really thinks that all those facts are just fake facts, a bit like in SciFi movies or Dick’s novels where the reality itself is entirely made up (Dick 1973), then our arguments about scientific epistemology would not hold. Although that may seem a weak conclusion, we believe that one cannot go further than that.

At this point, either we face the basic question of epistemic scepticism—which has been massively addressed by philosophers—or we turn to an argument sketched by Huneman (2015) about CTs that appeals to their increased epistemic costs. But this is not the topic of our paper, and should be developed independently.

### 6.3. Science and Conspiracies

Now, back to science and science-focused CTs. What would justify someone in preferring a “scientific epistemology” and considering that turning to a conspiracist view of scientists’ behaviour should be done in the last instance and with parsimony? Exactly the same confidence that even though trends to conspiracy exist among scientists, the system is such that they are robustly countered, especially, as we said, via the disproportionate cost superimposed to any kind of lack of probity (including conspiracy, for example in the form of overt service to funding sources’ interests). Scientists have absolutely no incentives to conspire on fraud, because the cost of fraud is extremely high, as exemplified by the scientists caught doing minor fraud and expelled from their lab, such as Mark Hauser (Carpenter 2012). Scientists in general are encouraged to criticise others’ work—successful criticism or debunking being a proof of their own skills—which may easily lead to unravel fraud. The Mertonian defence of the reliability of institutionalised science, recalled above, emphasises the fact that the social organisation of science

provides those counter-incentives (or negative weight) for conspiracies (in the sense of scientists agreeing to fraud, hide facts, forge data). So here again, there is an empirical element that justifies the choice of a “scientific” epistemology over a conspiracist epistemology. One cannot make it into a purely a priori affair.

## 7. Conclusive Remarks: Some Consequences

The arguments developed in this paper lead to a reasonably sceptical assessment of the prospects of a general account of conspiracy theories. Conspiracy theories are not theories, they are not an epistemologically coherent and unique set of views, they are not likely to fall together under the same criteria of irrationality, and they might be wrong or irrational in their own way, on a case by case basis. The divide between rationality-based approaches and critique of irrationality as mirrored by conspiracy theorists, seems here to stay. But to conclude, we will highlight here two kinds of consequences of those considerations.

First, let us consider the following list of current issues with scientific production: the replication crisis in psychology and the neurosciences (Makel *et al.* 2012), which led to the finding that possibly half of the research in those fields is flawed (Munafò *et al.* 2017); p-hacking practices (Head *et al.* 2015); h-index and impact factor systems which contribute to a scientific policy affected by an in-built preference for poorly designed science (Smaldino and McElreath 2016); increasing role of media coverage in the evaluation of researchers, and establishment of a research bias through this filter (Scheiber 2015); general increase in scientific fraud (Chevassus-au-Louis 2016); explosion of predator journals that publish purely ungrounded results and are often non-discriminated by lay people and even journalists. All those facts concur in showing that the guarantees against a science taken over by hidden social, financial or political interests are very weak. But this ultimately means that in the context of scientifically-based claims, adopting the “scientific epistemology”, namely, the choice of chance, randomness, non-conspiracy as a null or default hypothesis when addressing putative conspiracies in and about science, is not obviously justified. Severe sceptics, who would see current science in a way analogous to, in the political domain, what Soviet Union was to democracy, may not be trivially crazy. Or at least, they may become non-irrational in a close future, if the state of affairs regarding scientific production persists and gets worst.

Thus the defence against the continuum view that we sketched before, and which says that at the proper grain a non-vague, or at least sharp enough, difference between CTs and rational criticism of science emerges, seems now much more fragile. And its fragility is strictly correlated to the empirical state of science and scientific production.

The second consequence concerns the dominant approach to conspiracy theories in psychology and social psychology, or epistemology. Researchers often ask questions about *who* believes CTs, and why this is so, or why CTs spread among people. Philosophers in turn discuss whether it is irrational for someone to be a CT *believer*. The whole research, especially done since the 9/11, commits to this ‘individualist’ paradigm (or ‘individual belief’ paradigm). However, as we have shown, assessing the rationality of conspiracist epistemology, and even reconstructing reasons for beliefs, cannot be done independently of a specific social structure empirically assessed.

Thus, the last conclusion of this rather sceptic paper is that, not only is it misleading to view CTs as theories, and to search for an in principle, overarching argument against conspiracy theories—their rational assessment can only be done on a case by case basis, assessing the CT as something that is the object of situated agents' epistemic attitudes, rather than as an abstract representation of the world—but so is it to consider them in an individualist perspective, namely, by taking them as individual beliefs held by individuals. Believing in CTs more generally pertains to having a conspiracist worldview, as psychologists say; and this worldview in turn relies upon a conspiracist epistemology, to which one must prefer a scientific epistemology, as philosophers would argue. However, this cannot be argued in general, and the beliefs and epistemology cannot be considered in abstraction from the social concepts of the agent (e.g. Brotherton *et al.* 2013; Dagnall *et al.* 2015 for psychology; Cassam 2015; Keeley 1999 for epistemology)—not only the information available to her, but also the kind of political and economical regime she lives in (including the structure of scientific research policy). This last point may sound common-sensical but it appeared to us that much of the very sophisticated, rich and deep research that has been elaborated since the 9/11 often forgets it, while it used to be something sociologists from the 70s or 80s would take for granted (e.g. Billig 1987).<sup>23</sup>

### References

- Aaronovitch, D. 2009, *Voodoo Histories: The Role of the Conspiracy Theory in Shaping Modern History*, London: Vintage.
- Allègre, C. 2012, *L'imposture climatique*, Paris: Plon.
- American Medical Association, 2012, *Report 2 of the Council on Science and Public Health: Labeling of Bioengineered Food*, <https://www.ama-assn.org/sites/default/files/media-browser/public/about-ama/councils/Council%20Reports/council-on-science-public-health/a12-csaph2-bioengineeredfoods.pdf>
- Bilewicz, M., Cichocka, A. and Soral, W. (eds.) 2015, *The Psychology of Conspiracy*, Hove: Taylor and Francis.
- Billig, M. 1987, "Anti-Semitic Themes and the British far Left: some Social-Psychological Observations on Indirect Aspects of the Conspiracy Tradition", in Graumann, C.T. and Moscovici, S. (eds.), *Changing Conceptions of Conspiracy*, New York: Springer, 115-36.
- Boltanski, L. 2012, *Énigmes et complots. Une enquête à propos d'enquêtes*, Paris: Gallimard.
- Bonneuil, C. 2006, "Cultures épistémiques et engagement des chercheurs dans la controverse OGM", *Natures Sciences Sociétés*, 14 (3), 257-68.
- Bouchard, F. 2016, "The Roles of Institutional Trust and Distrust in Grounding Rational Deference to Scientific Expertise", *Perspectives on Science*, 24 (5), 582-608.
- Bronner, G. 2013, *La démocratie des crédules*, Paris: PUF.

<sup>23</sup> We wish to thank Juha Räikkä, Sébastien Dutreuil, as well as two anonymous referees for useful comments. This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 660187.

- Brotherton, R., French, C. and Pickering, A.D. 2013, "Measuring Belief in Conspiracy Theories: The Generic Conspiracist Beliefs Scale", *Frontiers in Psychology*, 4, 279.
- Brotherton, R. and French, C. 2015, "Intention Seekers: Conspiracist Ideation and Biased Attributions of Intentionality", *PLoS ONE*, 10 (5): e0124125. DOI: 10.1371/journal.pone.0124125
- Bruder, M., Haffke, P., Neave, N., Nouripanah, N. and Imhoff, R. 2013, "Measuring Individual Differences in Generic Beliefs in Conspiracy Theories across Cultures: The Conspiracy Mentality Questionnaire (CMQ)", *Frontiers in Psychology*, 4, 225.
- Byford, J. 2014, "Beyond Belief: The Social Psychology of Conspiracy Theories and the Study of Ideology", in Antaki, C. and Condor, S. (eds.), *Rhetoric, Ideology and Social Psychology: Essays in Honour of Michael Billig. Explorations in Social Psychology*, London: Routledge, 83-94.
- Cassam, Q. 2015, "Bad Thinkers", *Aeon*, <https://aeon.co/essays/the-intellectual-character-of-conspiracy-theorists>.
- Carpenter, S. 2012, "Harvard Psychology Researcher Committed Fraud, U.S. Investigation Concludes", *Science*, September 6.
- Chevassus-au-Louis, N. 2016, *Malscience. De la fraude dans les labos*, Paris: Seuil.
- Cook, J. and Lewandowsky, S. 2016, "Rational Irrationality: Modeling Climate Change Belief Polarization Using Bayesian Networks", *Topics in Cognitive Science*, 8, 160-79.
- Connor, E.F. and Simberloff, D.S. 1979, "The Assembly of Species Communities: Chance or Competition?", *Ecology*, 60 (6), 1132-40.
- Dagnall, N., Drinkwater, K., Parker, A., Denovan, A. and Parton, M. 2015, "Conspiracy Theory and Cognitive Style: a Worldview", *Frontiers in Psychology*, 6, 206, <http://doi.org/10.3389/fpsyg.2015.00206>.
- Darwin, H., Neave, N. and Holmes, J. 2011, "Belief in Conspiracy Theories. The Role of Paranormal Belief, Paranoid Ideation and Schizotypy", *Pers. Individ. Dif.*, 50, 1289-93.
- Dick, P.K. 1973, "The Adjustment Team" (1954), in *The book of Philip K. Dick*, New York: DAW Books.
- Dieguez, S., Bronner, G., Gauvrit, N. and Wagner-Egger, P. 2016, "Lutons efficacité contre les théories du complot", *Le Monde*, 5-6 June.
- Douglas, K., Sutton, R.M., Jolley, D. and Wood, M.J. 2015, "The Social, Political, Environmental and Health-Related Consequences of Conspiracy Theories: Problems and Potential Solutions," in Bilewicz, M., Cichocka, A. and Soral, W. (eds.), *The Psychology of Conspiracy*, Hove: Taylor and Francis, 183-200.
- Duhem, P. 1906, *La Théorie Physique: Son Objet, Sa Structure*, Paris: Marcel Riviera & Cie; Eng. trans. from 2<sup>nd</sup> edition [1914] by P.W. Wiener Princeton, *The Aim and Structure of Physical Theory*, NJ: Princeton University Press, 1954.
- Gigerenzer, G., Todd, P.M. and the ABC Research Group 1999, *Simple Heuristics That Make Us Smart*, Oxford: Oxford University Press.
- Goertzel, T. 1994, "Belief in Conspiracy Theories", *Political Psychology*, 15, 731-37.
- Gombin, J. 2013, "Conspiracy Theories in France. Interim Report", *Counterpoint Reports*, Counterpoint.uk.com
- Gotelli, N.J. and Graves, G.R. 1996, *Null Models in Ecology*, Washington (DC): Smithsonian Institution Press.

- Guillemaud, T., Lombaert, E. and Bourguet, D. 2016, "Conflicts of Interest in GM Bt Crop Efficacy and Durability Studies", *PLoS ONE*, 11 (12), e0167777. <https://doi.org/10.1371/journal.pone.0167777>.
- Hahn, U. and Harris, A. 2014, "What Does It Mean to be Biased: Motivated Reasoning and Rationality", *Psychology of Learning and Motivation*, 61, 41-102.
- Head, M.L., Holman, L., Lanfear, R., Kahn, A.T. and Jennions, M.D. 2015, "The Extent and Consequences of P-Hacking in Science", *PLoS Biol*, 13 (3), e1002106. <https://doi.org/10.1371/journal.pbio.1002106>.
- Hempel, C.G. 1983, "Values and Objectivity in Science", in Cohen, R.S. and Laudan, L. (eds.), *Physics, Philosophy and Psychoanalysis*, Dordrecht: Reidel.
- Hofstadter, R. 1964, *The Paranoid Style in American Politics and Other Essays*, Cambridge (MA): Harvard University Press.
- Huneman, P. 2015, "The True Cost of Conspiracy Theories", *Open Democracy*, <https://www.opendemocracy.net/conspiracy/suspect-science/philippe-huneman/true-cost-of-conspiracy-theories>.
- Kahneman, D. and Tversky, A. 1974, "Judgment under Uncertainty: Heuristics and Biases", *Science*, 185 (4157), 1124-31.
- Keeley, B.L. 1999, "Of Conspiracy Theories", *The Journal of Philosophy*, 96, 109-26.
- Key, S., Ma, J.K. and Drake, P.M. 2008, "Genetically Modified Plants and Human Health", *J R Soc. Med.*, 101 (6), 290-98.
- Koed Madsen, J., Bailey, R. and Pilditch, T., "Growing a Bayesian Conspiracy Theorist: An Agent-Based Model", under review.
- Kuhn, T. 1962, *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press.
- Kuhn, T. 1977, *The Essential Tension. Selected Studies in Scientific Tradition and Change*, Chicago: University of Chicago Press.
- Kuhn, T. 1983, "Rationality and Theory Choice", *The Journal of Philosophy*, 80, 563-70.
- Leman, J. and Cinnirella, M. 2007, "A Major Event Has a Major Cause: Evidence for the Role of Heuristics in Reasoning about Conspiracy Theories", *SocPsychol Rev.*, 9, 18-28.
- Leman, J. and Cinnirella, M. 2013, "Beliefs in Conspiracy Theories and the Need for Cognitive Closure", *Frontiers in Psychology*, 4, 378, <http://doi.org/10.3389/fpsyg.2013.00378>
- Lewandowsky S., Oberauer, K. and Gignac, G.E. 2013, "NASA Faked the Moon Landing—Therefore (Climate) Science is a Hoax: An Anatomy of the Motivated Rejection of Science", *Psychological Science*, 24, 622-33.
- Makel, M.C., Plucker, J.A. and Hegarty, B. 2012, "Replications in Psychology Research. How Often Do They Really Occur?", *Perspectives on Psychological Science*, 7 (6), 537-42.
- Munafò, M.R., Nosek, B.A., Bishop, D.V.M., Button, K.S., Chambers, C.D., Percie du Sert, N., Simonsohn, U., Wagenmakers, E.J., Ware, J.J. and Ioannidis, J.P.A 2017, "A Manifesto for Reproducible Science", *Nature Human Behaviour*, 1 (1), 0021.
- Munoz, F. and Huneman, P. 2016, "From the Neutral Theory to a Comprehensive and Multiscale Theory of Ecological Equivalence", *Quarterly Review of Biology*, 91 (3), 321-42.
- Nowotny, H. 2004, "European Research Momentum", *Science*, 305, 753.

- Olsson, E. 2013, "A Bayesian Simulation Model of Group Deliberation and Polarization", in Zenker, F. (ed.), *Bayesian Argumentation*, Dordrecht: Springer.
- Oreskes, N. and Conway, E.M. 2010, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*, London: Bloomsbury Press.
- Popper, K. 1962, *Conjectures and Refutations. The Growth of Scientific Knowledge*, New York: Basic Books.
- Quine, W.V.O. 1975, "On Empirically Equivalent Systems of the World", *Erkenntnis*, 9, 313-28.
- Raab, M.H., Ortlieb, S.A., Auer, N., Guthmann, K. and Carbon C.C. 2013, "Thirty Shades of Truth: Conspiracy Theories as Stories of Individuation, not of Pathological Delusion", *Frontiers in Psychology*, 4, 406. <http://doi.org/10.3389/fpsyg.2013.00406>.
- Schatz, G. 2014, "The Faces of Big Science", *Nature Reviews*, 15, 423-26.
- Scheiber, N. 2015, "Academics Seek a Big Splash", *New York Times*, May 31.
- Smaldino, P.E. and McElreath, R. 2016, "The Natural Selection of Bad Science", *Royal Society Open Science*, 3, 160384.
- Stich, S. 1990, *The Fragmentation of Reason. Preface to a Pragmatic Theory of Cognitive Evaluation*, Cambridge (MA): MIT Press.
- Sunstein, C.R. and Vermeule, A. 2008, "Conspiracy Theories", *Harvard Public Law Working Paper No. 08-03*; University of Chicago, *Public Law Working Paper No. 199*; University of Chicago Law & Economics, Olin Working Paper No. 387. Available at SSRN: <https://ssrn.com/abstract=1084585> or <http://dx.doi.org/10.2139/ssrn.1084585>
- Taubes, G. 2016, *The Case Against Sugar*, London: Knopf.
- Thagard, P. 1978, "The Best Explanation: Criteria for Theory Choice", *The Journal of Philosophy*, 75 (2), 76-92.
- Van Fraassen, B.C. 1980, *The Scientific Image*, Oxford: Oxford University Press.
- Van Prooijen, J.W., Krouwel, A.P.M. and Pollet, T. 2015, "Political Extremism Predicts Belief in Conspiracy Theories", *Soc. Psychol. Pers. Sci.*, 6, 570-78.
- Wood, M.J. 2013, "Has the Internet Been Good for Conspiracy Theorising?", *PsyPAG Quarterly*, 88, 31-34.
- Wood, M.J. 2016, "Some Dare Call It Conspiracy: Labeling Something a Conspiracy Theory Does Not Reduce Belief in It", *Political Psychology*, 37, 695-705.
- Wood, M.J., Douglas, K.M. and Sutton, R.M. 2012, "Dead and Alive: Beliefs in Contradictory Conspiracy Theories", *Social Psychological and Personality Science*, 3, 767-73.