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DENYING THE EXISTENCE OF CONSENSUS OR DENYING ITS PROBATIVE VALUE? A CRITIQUE OF MCINTYRE’S PROPOSAL CONCERNING SCIENCE DENIAL

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Abstract. In this article, we try to argue, against McIntyre’s proposal in *How to talk to a science denier*, that there is a relevant difference between various forms of science denialism. Specifically, we contend that there is a significant distinction to be made between those forms of denialism which deny the existence of an expert consensus (the model of which is the strategy of the tobacco companies in the 1950s) and those which deny the *probatory value* of such expert consensus (on the basis, e.g., of conspiracy theories involving scientists). While McIntyre and others advocate for the value of communicating consensus as an effective and perfectly rational strategy against those forms of denialism which deceptively deny the existence of scientific agreement, we argue that this approach becomes question-begging against those which deny its *probatory value*. Accordingly, then, we object to McIntyre’s characterization that “all science denial is basically the same” and suggest a more nuanced understanding of the phenomenon.

Keywords: science denial • “tobacco strategy” • AGW denial • flat-Eartherism • anti-vaxxerism • McIntyre, Lee

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1. Introduction

1.1. Outline

In this paper, we will challenge Lee McIntyre’s proposal in *How to talk to a science denier* by arguing that science denialist discourses cannot be described in the way he suggests, namely, by claiming that “Their strategies are all the same” (McIntyre 2021, p.33). We will try to show that, though some expressions of denialism of anthropogenic global warming (AGW) seem to be a paradigmatic case of the strategy (developed by tobacco companies) to cast doubt on the existence of scientific consensus (and, consequently, reinforcing the perception of scientific consensus appears



as an adequate move to bolster a *rational* change in the beliefs of the public), other forms of science denial, such as flat-Eartherism or anti-vaxxerism, and even some expressions of AGW denialism as McIntyre describes it, do not aim to deny the *existence* of scientific consensus but rather reject its *probative value* altogether. Therefore, in these cases, the strategy proposed by McIntyre becomes question-begging.

Our exposition will proceed as follows:

In *section 2*, we will provide a brief historical overview of the so-called “tobacco strategy”, a type of scientific denialism that involves sowing doubt on the existence of scientific consensus in a certain area, initially about the harm caused by tobacco and subsequently about AGW. As we will see, such denialist discourses acknowledge the evidentiary value of consensus, if one exists, but dispute its existence in certain crucial cases.

In *section 3*, we will focus on McIntyre’s proposal to characterize scientific denialism as a whole. McIntyre intends to take up the description of the “tobacco strategy” and extrapolate it to other forms of science denial. McIntyre wants to merge the analysis of this strategy with the resources offered by the “FLICC” model of science denial. He concludes by claiming that “all forms of science denial are basically the same”.

However, as we will argue in *section 4*, a characterization, and a proposed solution, centered on the “tobacco strategy” as a *form of science denial which takes scientific consensus to be probative*, cannot succeed if we reconstruct climate change denialism (as McIntyre himself does by applying the “FLICC” model) as being *also* a discourse that questions precisely that probative character: if the existing scientific agreement is the result of a conspiracy, then it will be question-begging to appeal to it to prove a point.

Worse still, as we will argue in *section 5*, this problem does not affect only the case of AGW denial (in McIntyre’s own reconstruction). In the case of flat-Earthers, McIntyre’s emphasis on the alleged denial of expert consensus—as a crucial argumentative strategy—conflicts with the reality that flat-Earthers engage in a form of epistemological individualism that rejects expert authority altogether. Secondly, in the case of antivaxxers, and as shown by the “Wakefield affair”, the key denialist move is not to deny the existence of the expert consensus, but to question its probative value and suggest that it is the product of a conspiracy. Finally, skeptics about the safety of genetically modified organisms oscillate between doubting the existence of a scientific consensus in the area and claiming that scientific research is not trustworthy because it is influenced by corporate interests—which implies that expert consensus would not be probative anyway. In all of these cases, merely emphasizing the existence of scientific consensus simply begs the question against deniers.

In *section 6*, we recapitulate our results and consider a possible objection against our argumentative strategy.

1.2. Two preliminary problems: when and how?

The problem of scientific denialism is not assimilable to a mere *error*, a set of beliefs provably false which are held by a certain amount of people. People hold all kinds of false beliefs about all kinds of topics and this does not *necessarily* pose a serious threat to our societies. Science denialism is something different, a kind of problem which urges academics to abandon our Byzantine love for subtle discussions and join forces to efficaciously influence the problem. Take an obvious example: non-compulsory vaccination during the COVID-19 pandemics required individuals to make an informed decision to immunize—which, in turn, made vaccine hesitancy, or more general denial of the very existence of the disease, a serious threat. This kind of scenario is tackled by Lee McIntyre's *How to talk to a science denier*, a book which, right from the title, announces its intention to take part in a laudable collective effort against denialism. Now, precisely because of the urgency of these matters, two questions arise which do not emerge when we deal with ordinary academic debates, less loaded with immediate practical consequences: should we always respond to deniers, and if so, how should we respond?

Let us tackle the first question.

On one hand, it is important to mention that the beliefs we aim to address in this article are those with potentially dangerous practical consequences and have reached a certain threshold of dissemination. As highlighted by Lewandowsky et al. (2020), given the constraints of time and resources, picking our battles becomes imperative. On the other hand, even concerning beliefs carrying potentially dangerous consequences, the available evidence suggests that not all necessitate refutation. If a belief “is not widely spreading or lacks the potential to cause harm now or in the future, there may be no point in debunking it” (Lewandowsky et al. 2020, p.8).

A refutation inherently involves addressing the false belief to debunk it, but this introduces the risk of increased familiarity. If the belief is not widely known, publicly debunking it could ironically elevate its popularity and, as revealed by the studies concerning the ‘illusory-truth effect’, a claim we are more familiar with is, other things being equal, more amenable to be taken as true than an entirely novel claim (Hasher et al. 1977). Conversely, if it is already known, debunking might reinforce it among adherents. This is known as “backfire effect”. Therefore, the phrasing chosen for debunking false beliefs is critical, as Lewandowsky et al. emphasize: “You cannot correct someone else’s myth without talking about it. In that sense, any correction, even if successful, can have unintended consequences, and choosing one’s own frame may be more beneficial. For example, highlighting the enormous success and safety of a vaccine might create a more positive set of talking points than debunking a vaccine-related myth” (Lewandowsky et al. 2020, p.8).

Moreover, Sunstein and Vermeule (2009) point out that “direct attempts to dispel

the theory can usually be folded into the theory itself, as just one more ploy by powerful conspiracy members” (p.9). Consequently, a trade-off emerges when deciding whether to respond to deniers. In cases where their claims pose potential dangers to society, such as with anti-vaxxers and AGW deniers, there is no doubt that addressing the issue is imperative.

This leads us to our second question: how to respond to deniers? Do we want to implement public interventions which are *merely* efficacious in making the public accept scientific knowledge (about vaccines, global warming, and so forth) and act accordingly, or do we aim at the more ambitious goal of helping the public form *rational* beliefs about scientific knowledge? Are we looking for efficacy and rationality or just efficacy? Is it enough to change people’s minds through the influence of a charismatic figure, such as when Elvis Presley publicly received the polio vaccination (Brody and Hershfield 2021), which can be seen as benevolent manipulation of the public? Or do we want them, instead, to change their beliefs in the *appropriate* ways, in ways which we would deem reasonable for *our own* acquisition of beliefs?

A typical form of aiming at *rational* changes of belief is the attempt to *refute* forms of denialism—that is, assessing their content and “form” and finding rationally acceptable responses. When the World Health Organization (WHO), for instance, claims that we should listen to the arguments of “vocal vaccine deniers” because “analyzing their common structure provides [us] with the necessary knowledge on how to effectively respond” (World Health Organization 2016, p.26), the attempt seems to be not simply to influence the public, but to do it in a *rational* way. Even those authors who aim at “inoculating” the public against science denialism *before* it is exposed to its influence (Cook et al. 2017; Lewandowsky and van der Linden 2021; van der Linden et al. 2017) strive to counter such forms of misinformation rationally. They mainly show that the public can be provided with accurate *content*, or with a description of the deniers’ misleading “*techniques*” (roughly speaking, the fallacious modes of reasoning). The intention to efficaciously influence the public is, then, not dissociated from that of contributing to a *rational* acquisition of beliefs. Unlike the case of Elvis, these proposals are closer to communicating literacy and critical tools than to a benevolent manipulation. In turn, these “rational conversion” proposals provide us with a motivation to characterize forms of science denialism in the most accurate possible way: to debunk them, or “pre-bunk” them, we need to know how they argue.

However, certain authors have expressed skepticism regarding the feasibility of a “rational conversion”. As a result, alternative means of influencing the general public have emerged, which do not rely on grounds that can be considered rationally probative. A paradigm example of this kind of (perhaps covert) pessimism is Elizabeth Anderson’s article on public policies and lay assessment (Anderson 2011). Anderson begins by pointing out that, about issues such as AGW, the fact that the lay public

lacks the intellectual resources to assess the scientific evidence firsthand does not prevent it from rationally forming beliefs about the topic. According to the author, the lay public can form beliefs about scientific matters “by proxy”, by determining which (alleged) experts have the relevant epistemic credentials and whether they speak in the name of scientific consensus. In line with other authors (such as Goldman 2001), Anderson believes that, for laypeople, it is *rational* to accept a certain proposition when experts agree on it. Therefore, she finds no incompatibility *in principle* between democratic legitimacy, which requires that policies enjoy the support of a democratic majority, and a scientific foundation for such policies. However, Anderson herself remarks that this possibility *in principle* is, in fact, seldom realized. Following the work of Dan Kahan and colleagues on “cultural cognition” (Braman et al. 2007; Kahan and Braman 2005), Anderson points out that public acceptance of scientific knowledge is often conditional on whether or not such knowledge contradicts the public’s previous beliefs and values. In the case of AGW, and according to this theoretical framework, this tendency can be seen in the fact that the phenomenon is much more easily recognized by those who favor State intervention on the economy. Due to this, Anderson writes, vast fringes of the American public reject the theory of AGW although there exists a *publicly recognizable* scientific consensus on this topic. Therefore, she ends up praising the benefits of recruiting “spokespersons of diverse backgrounds to inform the public of the scientific consensus”, because “People tend to accord higher credibility to the testimony of people who share their background and value orientation”, as attested by “President Obama’s cultivation of ties to leading Evangelical Christians, such as the influential preacher Rick Warren” (Anderson 2011, pp.158–9). This preacher is certainly not “influential” because of his *epistemic* credentials, so appealing to his help is hardly a form of “rational conversion”. There is, in fact, an obvious mismatch between the reasons Anderson herself has for accepting the theory of AGW (namely, the existence of a scientific consensus) and the motives she thinks *some laypeople* should have for accepting it (namely, that *Rick Warren* promotes it). Insofar as we have relinquished the demand for rationality, the need to actually *respond* (let alone *rationally* respond) to denialists’ discourses may also disappear. If we are interested in efficacy, not “rational conversion”, then *why even bother to respond* the denialists’ arguments? Why not simply take actions which have in practice turned up to be effective—even appealing to the testimony of a preacher?

Now, by claiming that some ways of inducing belief changes are *merely* efficacious and not rational, we do not mean that they cannot produce, in the long run, rational subjects by means of a series of non-rational techniques. As a limit case, primary education can be described as a rather obvious case of inducing a mass of beliefs on the sole authority of a teacher—an authority which children are certainly ill disposed to assess. However, we can quite reasonably believe that, without those

beliefs, no “critical”, “rational” or “scientifically literate” subjects can emerge. For a somewhat broader scope of interactions, Richard Rorty insisted that even when we do not treat certain subjects as capable of rational dialogic exchanges, we can treat them in the way which is *necessary for them to become* (perhaps in the long run) capable of entering such exchanges.¹ Thus, when, in this article, we claim that some forms of tackling science denialism cannot produce “rational conversion” because, as we will see, they are simply question-begging, we do not mean that such attempts cannot promote critical thinking and scientific literacy in the long run—which is in principle conceivable and, after all, an empirical question. All we are saying is that inducing belief changes in ways which are not rational, even if it ends up *producing* rational subjects, does not in itself *instantiate* the virtues of rationality we want to extol. All in all, to argue in a question-begging way is certainly not a “virtue” we want to promote.

And, in fact, McIntyre’s purpose seems to be that of promoting rational conversions. In the end, what McIntyre wants is to “make a dent in science deniers’ claims that they were the ones who were actually being scientific. [...] Even if I couldn’t convince them with evidence, I could show where their reasoning skills weren’t up to snuff” (McIntyre 2021, p.xvi). McIntyre wants to *rationaly refute* denialists, not only change (at any costs) denialists’ minds, and therefore it is not a minor question whether his own arguments against denialists are rational. We may share his purposes: perhaps, as a general rule it is preferable to *rationaly* convert people to accept scientific knowledge. Alas, as we will try to show, some of McIntyre’s crucial moves fail this test. And this, in turn, means that there is something wrong in the way he *describes* science denial. In a nutshell, we will argue that not all his replies are rational because not all forms of denial are *correctly described* as what they would need to be for such replies to be rational.

2. Doubt is our product: tobacco and climate change

“Doubt is our product” wrote R. J. Reynolds, heir to the R. J. Reynolds Tobacco Company (RJR) in an internal company memo. The year was 1969, and that sentence summed up the strategy that had been developed by the tobacco industry in the 1950s to protect — and increase — its profits in the face of mounting evidence that cigarettes caused lung cancer and other associated diseases. Reynolds’ statement continued: “[Doubt] is the best means of competing against the ‘body of evidence’ that exists in the minds of the general public. It is also the means of establishing controversy” (Michaels 2008, p.11). The idea was simple but effective: to create uncertainty in the public about the available scientific evidence without denying it, to cast doubt on the existence of the scientific consensus, to give rise to controversy where there was none.

This was the first but not the last time such a strategy was implemented. Known as the “tobacco strategy”, it marked a path that continues to this day and quickly found new followers.

“The industry learned that debating science is much easier and more effective than debating politics” (Michaels 2008, p.XI). In this learning process not only large industries and public relations companies had a part, but also, and unfortunately, researchers who even became the visible faces of the campaigns.

In 1979, very shortly before retiring from his university academic work, the physicist Frederick Seitz began working as a permanent consultant for RJR advising its medical research program and just five years later, in 1984, he founded the George C. Marshall Institute, of which he was president until 2001 (*The Marshall Institute – Remembering Frederick Seitz*, 2011). The Institute’s original goal was to defend President Ronald Reagan’s Strategic Defense Initiative, but in the 1990s it evolved into a think tank aimed at discrediting the science of climate change. Seitz was one of those primarily responsible for creating the false controversy regarding the existence of AGW (Oreskes and Conway 2011), the consequences of which we are suffering and will continue to suffer for years to come. In 2007, just a few months before his death, he wrote a letter in support of the famous Oregon petition (*Global Warming Petition Project 2007*), a brief circulated in 1998 and 2007 that sought to undermine the scientific consensus by presenting more than 30,000 signatures of so-called researchers claiming that there was no AGW and rejecting the Kyoto Protocol. However, while many of the signatures were from people with science-related degrees, the vast majority had never studied climatology or done research in the field (they were mostly mechanical engineers, computer scientists, mathematicians, etc.), i.e., they were what are considered “fake experts”.

This kind of fraudulent dissent allows statements such as those of U.S. Senator Inhofe, who publicly stated that “scientists disagree strongly about whether human activities are responsible for global warming, or whether those activities will precipitate natural disasters”. In the same vein, Oreskes and Conway highlight the fact that “As late as 2007, Vice President Richard Cheney commented in a television interview, ‘Where there does not appear to be a consensus, where it begins to break down, is the extent to which that’s part of a normal cycle versus the extent to which it’s caused by man, greenhouse gases, etcetera’”. Denialists in both the acid rain and global warming cases challenged the existence of scientific consensus and successfully presented a “debate” that the scientific community had already settled. (Oreskes and Conway 2011, p.13. Italics ours).

Even though the scientific community had long before established the anthropogenic character of global warming, this crucial factor was still presented to the public as a matter of ongoing debate. The reason for this discrepancy might have been summarized by a notorious memo produced by Frank Luntz for the Republi-

can Party: “Voters *believe* that there is no consensus about global warming within the scientific community. *Should the public come to believe that the scientific issues are settled, their views about global warming will change accordingly.* Therefore, you need to make the lack of scientific certainty a primary issue in the debate, and defer to scientists and other experts in the field” (Luntz 2003, p.137).

In spite of its shamelessly cynical tone (or precisely because of it), Luntz’s text sheds light on an important point: there is a “consensus gap” between what the public *takes* to be the level of agreement between scientists on AGW and the actual consensus (Cook 2016). As McIntyre notes, “overall public opinion remains split on the causes of climate change, with only 29 percent of respondents accurately reflecting the 97 percent consensus view of the world’s scientists that human activity is nearly completely responsible for the increase in global temperature” (McIntyre 2021, p.84). He also cites an even more worrying study, according to which “only about 15% of Americans are aware that the expert climate consensus exceeds 90%” (Nuccitelli 2018). And the tobacco strategy aims at keeping that gap wide open as the action plan by the American Petroleum Institute claimed, “Victory will be achieved when average citizens ‘understand’ (recognize) uncertainties in climate science” (American Petroleum Institute 1998).

Although our main interest is in the strategy developed by AGW deniers, it is important to note that it was not the only case in which it was used for environmental issues. The phenomenon of acid rain was not considered a serious threat until the 1960s and 1970s when early research in the Hubbard Brook Experimental Forest yielded unequivocal evidence of its effects on living things and their environment (“About the Forest” n.d.). Throughout the 1980s, consensus was clearly established in the scientific community: the human contribution to acid rain was undeniable (*Acid Deposition* 1983; *Acid Deposition* 1986; *Atmosphere-Biosphere Interactions* 1981). However, in 1984, the Reagan administration officials secured Siegfried Singer, a physicist and professor of environmental science, as a member of the team preparing a report on acid rain, who used various arguments to undermine the consensus and create the impression of scientific disagreement, including blaming volcanoes even though previous research had already ruled out this cause (Nierenberg 1984). Singer’s intervention created the impression that “there was real and serious scientific disagreement” concerning acid rain (Oreskes and Conway 2011, p.91). The press echoed these arguments. “Many people became confused, thinking that the acid rain issue was unsettled, that scientists had no consensus” (Oreskes and Conway 2011, p.102). More than 70 acid rain bills were rejected in Congress during the Reagan administration until George Bush took office and an amendment to the Clean Air Act was proposed to limit emissions. Despite continued lobbying by denialist and corporate lobbyists, the fear of generating a conflict with Canada (which was suffering from US emissions) allowed an agreement to be reached in 1991 (US EPA 2015).

To this day, there are still acid rain deniers.

In all these cases, the strategy these researchers deployed is summarized by Oreskes and Conway in the following terms:

They claimed the link between smoking and cancer remained unproven. They insisted that scientists were mistaken about the risks and limitations of SDI. They argued that acid rain was caused by volcanoes, and so was the ozone hole. They charged that the Environmental Protection Agency had rigged the science surrounding secondhand smoke. Most recently—over the course of nearly two decades and against the face of mounting evidence—they dismissed the reality of global warming. [...] *In case after case, they steadfastly denied the existence of scientific agreement, even though they, themselves, were pretty much the only ones who disagreed* (Oreskes and Conway 2011, pp.6–7).

In contrast, the task of those who fight science denial is to inform the public about the actual consensus, because such information, as Luntz feared, tends to be effective in changing people’s minds—even the minds of those who, because of their moral and political identity, may be more inclined to rejecting certain scientific discoveries. McIntyre himself notes this point (which, as we will see later, is rather surprising) when he cites the results of a study showing that “emphasizing the 97 percent consensus among climate scientists made a bigger difference in convincing conservatives” (politically less inclined to accept AGW) “than others” (McIntyre 2021, p.119). With a broader scope, McIntyre also writes:

[A]ppealing to the fact of a scientific consensus is one of the most compelling ways to get someone to change their mistaken empirical beliefs. Yes, of course there will be those *who deny that there is* a consensus. But research shows that even deniers—and, notably, especially conservative ones—can be compelled by scientific consensus. The work [(van der Linden et al. 2018)] was done before the coronavirus pandemic, and mostly involved the acceptance of consensus on climate change, *but there is no reason to think that this would not also apply to COVID-19 and other forms of science denial* (McIntyre 2021a, p.172. Italics ours).

Indeed, as McIntyre rightly notes, several studies point out the role of “perceived scientific agreement as a ‘gateway belief’ that supports or undermines other key beliefs about climate change, which, in turn, influence support for public action”. In this model, for example, “an experimentally induced change in the level of perceived consensus is causally associated with a subsequent change in the belief that climate change (a) is occurring, (b) is human-caused, and (c) how much people care about the issue” (van der Linden et al. 2015, p.2). Similarly, two experiments by Lewandowsky et al. (2013) show that the acceptance of scientific propositions by a number of experimental subjects correlates with the consensus that those subjects

believe exists about the propositions in question, from statements such as “Human CO₂ emissions cause climate change” to “Smoking causes lung cancer”. In a similar vein, Ding et al. (2011, p.462) show that “people who believe that scientists disagree about global warming tend to be less certain that global warming is occurring and show less support for climate policy”. To increase the perception of such scientific consensus on phenomena such as global warming is a reasonable response to the insistence of denialist discourses that there is no such consensus.

It is important to note that here McIntyre, in agreement with Oreskes and Conway, describes science deniers as people who deny “*that there is a consensus*” — i.e., who deny the *existence* of such a consensus, not its probative value. In other words, science deniers agree that *if* there existed a consensus about, say, anthropogenic global warming, *then* this would warrant believing that such a phenomenon is actually taking place.

Laypeople are thus understood (both by denialists such as Luntz, and critics of denialism as Oreskes and Conway and McIntyre) to reason along the following lines:

1. Scientific consensus is probative, i.e., *if* there is expert agreement on a certain proposition *p*, then we are justified in believing *p*.
2. *There exists, in fact*, a scientific consensus on a variety of such propositions.
Therefore,
3. We are justified in believing those propositions.

Based on this reconstruction, let us take another look to some key features of the “tobacco strategy” deployed in the cases of tobacco itself and global warming. We can identify four characteristics: two less decisive (a-b) and two fundamental (c-d):

- a. The denialist strategy recognizes, as the scientific community itself and the public do, *an elementary distinction between experts and laypersons*: the former are credible sources to which to defer, the latter are not;
- b. To deny the existence of an expert consensus, the “tobacco strategy” *appeals to a fraudulent “dissent”*, which in the case of global warming takes the form of recourse to fake experts as those signing the Oregon petition (although, in the case of smoking, these are rather genuine experts whose work is affected by a conflict of interests).

But the two most important traits of the strategy, which will provide us with an analysis heuristic for the rest of this work, are the following:

- c. Leaving aside that this is achieved by the recourse to a fraudulent “dissent”, what appears to be decisive in this strategy is *that the existence of consensus* (“*that there is a consensus*”, in McIntyre’s last quotation) *is denied* for certain

specific areas, like the consequences of smoking or climate change: denialists aim to undermine the belief in a “scientific agreement” because, as noted by Luntz, the public’s perception of such agreement often leads to widespread acceptance of the scientific position in question. That is to say, *the applicability of premise (2) is denied*.

- d. Finally, this means that, as a part of this strategy, *it is necessary for denialists to concede, at least implicitly, the evidential value of consensus among experts*: according to the denialists, *if there were expert consensus around a proposition (such as “Smoking causes cancer” or “There is AGW”), then we would be justified in accepting that proposition. In other words, premise (1) is not denied*.

3. The alleged general features of scientific denialism according to McIntyre

Whereas Oreskes and Conway attempted to characterize what can be seen as one form of science denial, whose applications extended from the case of the tobacco-cancer link to other influential issues, several authors have tried to extrapolate the characteristics of scientific denialism *in general*. That is, they have tried to identify a shared core of “techniques” or resources in all forms of denialist discourses, including those relating to vaccines or the shape of the Earth. This attempt has resulted in the popularization of the so-called “FLICC model” of science denial. Given that McIntyre’s proposal can be seen as a synthesis between the reconstruction of the “tobacco strategy” and this model, we need to briefly refer to the latter.

The “five tropes” framework was initially proposed by the Hoofnagle brothers (Hoofnagle 2007) in such an unorthodox medium as an Internet blog (!), then academically “legitimized” by Diethelm and McKee (2009), somewhat uncritically “canonized” by the WHO (World Health Organization 2016) and finally popularized, in the form of an acronym by which it is currently known, by the climate change communication specialist John Cook (Cook 2020). According to this model, the hallmarks of science denialism are:

- the use of Fake experts (F),
- the appeal to Logical fallacies (L),
- the imposition of Impossible expectations (I),
- “Cherry picking” (C) and
- the presence of Conspiracy theories (C).

As a proposal of a characterization of science denialism *in general*, the FLICC model emerges once and again in the specialized literature, in which it has reached the

status of something like a canon (Cook 2017; Damico et al. 2018; Dubé et al. 2013, 2015; Dyrendal and Jolley 2020; Guerrero 2022; Hoffman et al. 2019; Lewandowsky, Armaos, et al. 2022; Lewandowsky, Cook, et al. 2022; Liu 2012; Matos 2014; McIntyre 2021a; Peters and Besley 2020; Rosenau 2012; Sharma et al. 2022; van der Wiel 2015).

In the particular case of McIntyre, he points out that by understanding and confronting the approach allegedly shared by different kinds of denialism, we can be better equipped to address denialism on a wider scale. Thus, he points out that “After spending enough time around Flat Earthers, anti-vaxxers, intelligent designers, and climate change deniers, one begins to sense a pattern. *Their strategies are all the same*. Although the content of their belief systems differs, all science denial seems grounded in the same few mistakes in human reasoning” (McIntyre 2021, p.33. Emphasis ours). In another passage, he wonders whether “climate denial does not follow the same script as Flat Earth”, due to a difference in motivation: after all, denial of AGW, as the previous denial of the tobacco/cancer link, responds to an economic interest which seems not to exist in the case of flat-Eartherism (and, we may add, the latter entails a second difference: flat-Earthers seem to be mostly *mistaken*, whereas promoters of denialism of AGW are not mistaken but *lying*²). His response, which is worth quoting *in extenso* as it sheds light on several intertwined issues, is as follows:

Climate denial still follows the five tropes playbook, just as surely as Flat Earth did. Even though the five tropes of science denial reasoning were probably not consciously designed to get people to believe in Flat Earth, it is still the backbone of their reasoning. In the same way, even though climate denial was diabolically created by those with corporate and ideological interests, it follows the same playbook. This is a preexisting scheme left over from the tobacco strategy of the 1950s, and it conveniently fits virtually all forms of science denial (McIntyre 2021, pp.90–1).

According to McIntyre, the five “tropes” of scientific denialism “form a strategy that was deliberately created by those who had an interest in getting people to deny selected findings of science that threatened their beliefs. This was then copied in subsequent campaigns and used against different scientific findings” (McIntyre 2021, pp.45–6).

It is important to note that here the author is not merely assimilating climate change denialism (which can be seen as a continuation of the denial of the risks of smoking) with flat-Eartherism, but is *in turn* subsuming the features of both types of discourse under the “five tropes” of the FLICC model. And, unlike the original proposal by the Hoofnagle brothers,³ according to McIntyre it is not that denialist discourses *sometimes* use some of “these tropes” and at *other times* others, but rather that “the five tropes of science denial reinforce one another. No science denier stops to use the tactics one by one, but instead moves seamlessly from conspiracy theory, to

red herring, to questioning your experts or evidence in the manufacture of a seamless web of doubt” (McIntyre 2021, p.34). (As Tom Chivers (Chivers 2021) sardonically notes, “If you don’t make all five of those errors, you’re not an official McIntyre-accredited science denier”). Finally, regarding COVID-19 denialism, the author points out that it “provides a real-time test of the hypothesis *that all science denial is basically the same*. We see the five tropes of science denial on full display in our newspapers and on our televisions every day” (McIntyre 2021, p.163. Emphasis ours).

As we anticipated, McIntyre’s book utilizes both the “FLICC” framework and Oreskes *and* Conway’s theoretical reconstruction of the “the tobacco strategy of the 1950s” as a model to comprehend other types of science denial that adhere to “the same playbook”. Now, as we saw in section 2, Oreskes and Conway’s reconstruction of the strategy includes, as a crucial element, that denialists in both the tobacco and the AGW cases questioned *the existence of scientific consensus*, and successfully presented a “debate” that the scientific community had already settled. In other words, the strategy did not question the probative value of scientific consensus but rather misled the public into believing that, *as a matter of fact*, such consensus had not been reached yet.

Let us see, however, if McIntyre’s attempt to simultaneously apply the FLICC model *and* Oreskes and Conway’s reconstruction of the “tobacco strategy” yields an accurate characterization and the way to a rational refutation of forms of science denial. As we will immediately see, the answer is, alas, negative: along the lines of the “tobacco strategy”, what will be under attack in the laypeople’s argument for accepting scientific knowledge on the basis of existing consensus is the premise which states precisely its *existence*; according to the conspiratorial element in the “FLICC” model, what will be at stake is the premise which refers to the *evidentiary value* of consensus.

4. McIntyre’s analysis grid as applied to the case of climate change denial: the shift from denying consensus to denying its probative value

If we apply the general argument we reconstructed in section 2 to the specific case of climate science (CS), we get something along the following lines:

CS-1) Scientific consensus about climate change is probative; i.e., *if* there is expert agreement on a proposition such as “TAGW is a fact”, then we are justified in believing it.

CS-2) *There exists, in fact*, a scientific consensus on the proposition “TAGW is a fact”.
Therefore,

CS-3) We are justified in believing the proposition “TAGW is a fact”.

The question, then, is whether the “tobacco strategy” deployed by climate change deniers attacks CS-1) or CS-2). When we saw deniers claim that “science is divided”, there was no attempt to suggest that the general public should relinquish its tendency to trust scientific consensus. Instead, it focused on attacking (2) for such propositions as “Smoking causes lung cancer”. The point was, then, not that *in principle* consensus is not probative but simply that, *as a matter of fact*, the scientific community has not reached a consensus on those propositions.

In this scenario, given the ground in which denialists present their point, it is a perfectly *rational* response to try to show that there is, in fact, a scientific consensus on AGW, which, in conjunction with the undisputed premise (1), yields the conclusion that we are justified in believing that AGW actually exists. It is not question-begging to take (1) for granted, because, in this scenario, the denialist conceded it.

However, the scenario is not the same if we take the denialist to object to (1) instead of (2).

According to McIntyre, the analysis grid provided by the FLICC model (a model which, as this author understands it, would predict that “the five tropes of science denial [...] form a common script that lies behind *all* science denial reasoning” (McIntyre 2021b, p.55; italics ours)) would yield, when applied to the case of climate change denial, the following results:

	Climate change denialism
Fake Experts?	Yes (“relying on folks with no credible credentials in climate science”)
Logical fallacies?	Yes (e.g., “straw man”)
Impossible expectations?	Yes (“if there is any uncertainty or error, we should wait for more evidence”)
Cherry picking?	Yes (choice of “1998 as the base year for a bogus claim that global temperatures did not increase over an eighteen-year period”)
Conspiracy theories?	Yes (“climate scientists are fudging the data or [...] they are biased because they are profiting from the money and attention being paid to their work”; “there was a worldwide conspiracy of climate scientists”)

Now, it is interesting to note that, in analyzing AGW denialism in this way, McIntyre does *not* attribute to denialists a claim such as “There is no scientific consensus

on this topic”, as we might have expected insofar as he highlights the analogies between this form of denial and that promoted by tobacco companies, but, instead, a claim that scientific consensus is *not probative*, that is, an objection to (1). That is to say, we need to distinguish between:

- a *denial of the existence* of consensus, and
- a *denial of the probative value* of consensus.

In fact, there is a series of passages in his book which point in this second direction:

[T]he climate-denier in-chief in the White House continues to promote *the fantasy that climate scientists have a “political agenda”* (McIntyre 2021b, p.xii; italics ours).

President Trump has long held that global warming is a “Chinese hoax” meant to undermine the competitiveness of American manufacturing. Others have contended *that climate scientists are fudging the data or that they are biased because they are profiting from the money and attention being paid to their work* (McIntyre 2021b, p.38; italics ours)

During the 2009 Climategate debacle, deniers seized on some inappropriate emails sent by scientists at the University of East Anglia, and tried to use them *to show that there was a worldwide conspiracy of climate scientists* (McIntyre 2021b, p.91; italics ours).

Now, if we characterize denialists in this way, we will be dealing with something in the line of what McKee and Diethelm pointed out: “Denialists argue that scientific consensus arises not as a result of independent researchers converging on the same view but instead because researchers have engaged in a complex and secretive conspiracy” (McKee and Diethelm 2010, p.1311). According to this line of argument consensus perhaps *exists* but is certainly not probative. But if we take that deniers argue in this way, then it *will* be blatantly question-begging to insist on the mere *existence* of a scientific consensus on AGW, because their point will be precisely that such a consensus proves nothing.

Of course, it may certainly be the case that climate change deniers, at least in some occasions, do not deny the existence of scientific consensus but only its evidentiary weight. In fact, this is what Lewandowsky et al. point out when they highlight the *inconsistencies* of this form of denialism: according to climate change deniers, “There is no scientific consensus but contrarians are dissenting heroes” (Lewandowsky et al. 2018, p.181), a contradiction in the face of which it is necessary to insist that “Either there is a pervasive scientific consensus in which case contrarians are indeed dissenters, or there is no consensus in which case contrarian opinions should have broad support within the scientific community and no fearless opposition to an establishment is necessary” (Lewandowsky et al. 2018, p.182). But speaking of inconsistency here is not devoid of consequences: it involves pointing out that climate change

denialism might be some kind of “moving target”, *which cannot always be attacked by means of communicating consensus*. If deniers cast doubt on the evidentiary value of expert agreement, then a rational response to their arguments will need to show that such conspiratorial doubts are in fact not well founded. The need to approach in different ways the general public and those people who are already under the influence of conspiratorial beliefs has, by the way, been noted by Lewandowsky and Cook. In spite of their interest to present general traits of science denial by means of the “FLICC” model, they readily acknowledge that “If conspiracy theorists re-interpret evidence” (for example, they re-interpret, in conspiratorial terms, the lack of credited dissenting voices to scientific agreement on AGW), “then they require a different strategy to those who value evidence” (Lewandowsky and Cook 2020, p.7).

Now, let us for the time being ignore the distinction between these two radically different claims on behalf of climate change denial. Let us assume that this form of denial is in fact homogeneous. Under that assumption, does McIntyre’s analysis succeed in describing other forms of denialism? Unfortunately, we will see that this is not the case.

5. Other three forms of science denial

5.1. The case of flat-Eartherism

Flat-Eartherism is an extreme case of scientific denialism because it involves rejecting millennia of established scientific thought. In contrast to questioning a body of knowledge that is less established, such as the theory of AGW, being a flat-Earther involves disagreeing with fundamental findings of geology, astronomy, and physics. Therefore, a flat-Earther would be considered a science denier par excellence, rather than a “gray” case that is difficult to classify. It is not surprising, in this line, that the first chapter of McIntyre’s book is devoted precisely to this discourse (McIntyre 2021, pp.1–31).

McIntyre attempts to show that flat-Earthers hold their views based on a “reliance on fake experts”, which would allegedly remain, then, as a trait shared with the “tobacco strategy”. In McIntyre’s words:

The populist mistrust of experts [...] opens the door for science deniers and other ideologues to promote their own brand of experts who — even if you want to argue that they might also be biased — are at least holding up the other side in an open scientific controversy, which achieves a certain kind of balance that sounds fairminded to uninformed outsiders who just want science to be “objective”. But this, of course, leads to a sort of false equivalence, whereby science deniers feel justified in trusting their own “experts” — even if they have no expert training at all — against those whom they feel

are biased against them. [...] [T]his type of reasoning was on full display at Flat Earth International Conference 2018. When Robert Skiba took the stage and *said that he had no scientific training but he did have a white lab coat*, what could this be other than an attempt to show favor for some kinds of “experts” and denigrate others, *whose only claim to authority is how they are dressed* (McIntyre 2021a, p.41. Italics ours).

Applying McIntyre’s analysis grid, which is, as we saw, an adaptation of the “FLICC” model, the situation would allegedly be as follows:

	Climate change denialism	Flat-Eartherism
Fake experts?	Yes (“relying on folks with no credible credentials in climate science”)	Yes (Appeal to one’s own authority against that of “conventional” experts)
Logical Fallacies?	Yes (e.g., “straw man”)	Yes (e.g., “red herring”)
Impossible expectations?	Yes (“if there is any uncertainty or error, we should wait for more evidence”)	Yes (“an absurd standard of proof” to reject, e.g., the possibility that images of the Earth have been faked)
Cherry Picking?	Yes (choice of “1998 as the base year for a bogus claim that global temperatures did not increase over an eighteen-year period”)	Yes (emphasis on the fact that “you can <i>sometimes</i> see the city of Chicago from forty-five miles out Lake Michigan”)
Conspiracy theories?	Yes (“climate scientists are fudging the data or [...] they are biased” “because they are profiting from the money and attention being paid to their work”)	Yes (“There was no Moon landing; it happened on a Hollywood set”; “All the airline pilots and astronauts are in on the hoax.”)

We have already questioned the accuracy of the fifth row of this analysis for the case of AGW denialism (even before introducing any comparison with other forms of denialism). Let us now, for the sake of the argument, concede that, from the second to the fourth rows, McIntyre succeeds in showing a relevant similarity between these two discourses.⁴ The curious assimilation is, we want to argue, the one in the first row.

To highlight the similarities despite the aspect of dishonesty that we mentioned in section 3, let us consider a scenario where we are discussing people who *sincerely believe* the discourse of climate change denialism. We are not referring to cynical liars

promoting a deception. In this context, their approach towards expert discourse is, at least in principle, like that of sincere flat-Earthers. McIntyre assumes that, just like climate change deniers rely on fake experts, flat-Earthers do something similar when they take themselves (despite their own lack of scientific credentials) as “experts” in astronomy or geology. This is a curious assimilation given the fact that flat-Earthers *do not* appeal to experts, *as opposed to laypeople*, as sources of credible information. Quite on the contrary (and, ironically, it is McIntyre himself who, among others, shows this) they promote a radical form of epistemological individualism (“Do your own research”). Those who hold that the Earth is flat question as a whole the appeal to expert authority and declare to follow nothing but the evidence provided by their own senses, in particular the experiments they pride themselves on being able to carry out individually. This is an attitude which, in principle, stands in sharp contrast to what climate change deniers do when they defer to (at least some) specialists as credible sources. *Even if*, in a deviant sense, flat-Earthers called youtubers such as Mark Sargent “experts” in their area, this would not carry the consequence that they are trustworthy sources — but only convey a recognition of their trajectory in flat-Earth movement. Even “expert” Flat Earthers do not ask us to trust *them*, but, on the contrary, they encourage people to “Do some of your own research, and ask questions” (Sargent 2015). Although in some particular cases flat-Earthers may appeal to “conventional” experts, as in the unfortunate example of the geophysicist who is one of the leading exponents of this form of denialism in Brazil (“To 11 Million Brazilians, the Earth Is Flat”, 2020), as a rule they systematically disregard the value of expert knowledge. In the words of one flat-Earther in particular, “This guy was trying to tell me I’m wrong, and he was like, ‘I have a master’s degree in science’. And I said, ‘I guarantee you that you’re smart, brother. But you’re a parrot. All you’re doing is repeating back what they told you” (Ingold 2018).

Flat-Eartherism is thus based on two distinct yet interrelated assumptions. On the one hand, it presupposes that individuals without specialized academic training can assess scientific claims in astronomy or geology; that is, that the absence of specific academic training does not disqualify anyone from evaluating scientific discourse. On the other hand, it is committed to the thesis that lay people should make first-hand evaluations of certain statements that scientists would regard as part of their specialized knowledge: indeed, since such specialists are, according to the flat-Earth narrative, part of a conspiracy, they are certainly not reliable enunciators and the only way to discover the truth about the shape of our planet will be by investigating at first hand. For flat-Earthers, “the elite among world governments, scientific institutions, and international space agencies are conspiring to deceive the public and hide the true shape of the Earth” (Olshansky et al. 2020, p.47). Conspiratorial thinking has been repeatedly identified as a central feature of flat-Eartherism (Olshansky 2018, pp.46–8, p.51).

Climate change deniers do not assume, as flat Earthers do, that the lay public can do their own research. Instead, they appeal (as in the infamous “Oregon petition”) to the (alleged) epistemic authority of “31,487 American scientists [. . .] including 9,029 with PhDs” (sic). *This is why* such a move can be rationally countered by insisting that the overwhelming majority of those scientists are not climatologists, *and* that those scientists who are climatologists agree, in a 97%, with the theory of AGW. This move can find no parallel in the case of flat Earthers. Insisting that the overwhelming majority of astronomers and geologists reject the belief in a flat Earth is no argument against a movement whose very basis is the rejection of such an appeal to authority.

In fact, McIntyre can only class these two forms of denialism together because, by using the general label “mistrust of experts”, he overlooks the difference between

- (I) a mistrust of *certain* experts, which is compatible with still acknowledging the relevant difference between experts and laypeople as credible sources, and the probative value of *expert* consensus, and
- (II) a mistrust of experts *in general*; in particular, a mistrust of the very idea that the opinion of experts is more relevant than that of laypeople.

What McIntyre highlighted as a similarity (the recourse to experts) can then be described, instead, as a *radical* difference. In other words, for the examples analyzed, the contrast is clear: flat-Earthers, *unlike the promoters of the “tobacco strategy”*, have no need to deny the existence of a scientific consensus. Rather, they see such consensus as the outcome of a conspiracy.

Now, McIntyre might certainly argue (as a limit move) that even though flat-Earthers do not deny the existence of consensus, communicating consensus to the public could *still* be an effective strategy to counter their influence. In essence, this means that flat-Earthers should not be challenged using the same terms in which *they* present the debate. Perhaps, we could simply *ignore* their conspiratorial thinking and insist that the overwhelming majority of scientists agrees that the Earth is spherical; perhaps that would “work” as a strategy against them. But, even if that were the case, it would mean that *developing a reply to flat-Earthers* and *describing what flat-Earthers do* are very different tasks, that our reply does not need to appeal to what is specific of their discourse. And therefore, our practical interest in countering their influence would certainly not function as an argument for the kind of grid McIntyre favors.

The situation, then, takes the form of a dilemma:

- either we need to avail of an accurate description of what science deniers say, because we need to reply to them in their own terms — *in which case McIntyre’s proposal fails, because his insistence on communicating consensus is not in line with his characterization of different forms of science denial,*

- or we need to check what “works” against science deniers, irrespective of the specificities of their different discourses (such as flat-Eartherism or the “tobacco strategy”) — *in which case our pragmatic interest of countering the influence of science denial simply will not function as an argument to favor any specific analysis grid.*

Again: perhaps we are only interested in what *works* — and this is why our point does not need to be that of a *rational* change of beliefs. Science denial frequently is, in the most literal possible form, a matter of life or death (people die because of vaccine hesitancy, our very species faces the threat of extinction because of global warming) and, consequently, it might not be *that* important whether people currently come to accept scientific knowledge on a *rational* basis. It might be sufficient to adopt a strategy that “works”, even if that strategy amounts to asking people to change their minds in a way which, from a *rational* point of view, would not constitute a *refutation* of science denialism (i.e., insisting that *consensus exists* despite science deniers claiming that *consensus is not probative*). However, *if* we were interested in offering *rational* replies to science deniers, then (once again) the scenario would certainly not favor McIntyre’s grid. Insofar as such replies involve, as a key element, communicating consensus, then what should interest us is whether deniers are in fact denying the existence of that consensus (something that, let us insist, “classical” AGW deniers *do* and flat-Earthers *do not*).

5.2. A possible counter-objection

Now, in the last sub-section we attempted to show that McIntyre’s analysis grid fails because it does not consider crucial differences between forms of denialism which follow the “tobacco strategy”, on the one hand, and flat-Eartherism, on the other. However, an objector might say that, even if correct, our objection is *irrelevant*, given the scarce importance of flat-Eartherism itself: it appears to lack practical consequences and it is demographically marginal. Thus, even if it were to represent a paradigmatic case of scientific denialism, it would still be a minor concern when it comes to confronting denialism within society.

In this regard, a few points can be made. First, this counter-objection is not available for McIntyre himself. When he asks, “What is the harm from conspiracy theories?” and admits that “Some may seem benign”, he seems to have in mind precisely beliefs such as those of flat-Earthers, which might carry no practical consequences. However, he goes on,

note that the most likely factor in predicting belief in a conspiracy theory is belief in another one. And not all of those will be harmless. What about the anti-vaxxer who thinks that there is a government coverup of the data

on thimerosal, whose child gives another measles? Or the belief that anthropogenic (human-caused) climate change is just a hoax, so our leaders in government feel justified in delay? (McIntyre 2021a, p.40)

In other words: while an isolated belief such as “The Earth is flat” may seem insignificant, detached from the implications it should have in practical situations like planning a trip — just as it has been pointed out, in parallel, that magical beliefs such as astrology are also “innocuous” — it is not clear that the acceptance of some anti-scientific discourses *does not function as a gateway to others*. In particular, studies suggest that the acceptance of anti-scientific beliefs is often linked to the acceptance of anti-scientific *criteria* (Metz et al. 2018); that is, of epistemic norms (about what would justify the acceptance of a certain proposition) that legitimize recourse to faith or to what “feels true in the heart”. It is not obvious that, once irrational epistemic norms have been adopted, they can be “encapsulated” so that they affect only one area of discourse and do not extend, for example, to medical issues.

The second point is that, even if we were to concede that the inapplicability of a proposal such as McIntyre’s to the case of flat-Earth discourse is not a particularly pressing problem, there are examples of other discourses to which this proposal is also inapplicable and which, although also demographically marginal, are not without potentially devastating social consequences: the resistance to GMO and the anti-vaccine movement.

5.3. The cases of genetically modified organisms and vaccines

We have already seen that, in the case of AGW denialism, along with the strategy, typical of tobacco companies, of claiming that “science is divided”, McIntyre himself presents evidence that some such deniers appeal, instead, to a denial of the *probative value* of scientific consensus. If we turn to the case of skeptics about the safety of genetically modified organisms (GMO) this duality reemerges — which, again, sheds doubt about the alleged similarity with the “tobacco strategy”, and about the rationality of just insisting that scientific consensus exists.

The part of McIntyre’s reconstruction which does fit both this attribution of similarity and the corresponding recommendation to communicate consensus is that in which McIntyre writes:

One of the favorite techniques of GMO deniers is to raise doubts that there really is a scientific consensus. This is achieved by cherry-picking lists of dissenters, who may or may not have any expertise in this area. The Greenpeace report *Twenty Years of Failure* states that it is a “myth” to think that GMO foods are safe to eat and claims that “there is no scientific consensus on the safety of GM foods” (McIntyre 2021b, pp.132–3. The passage to which McIntyre refers is in Cotter et al. 2015, p.10).

Clearly, this is the kind of denial of the existence of consensus that is at play in the tobacco strategy, and against which it is certainly not question-begging to simply insist that consensus *exists*. The problem is that McIntyre himself juxtaposes these kinds of declarations with others of an entirely different sort — those which shed doubt, on conspiratorial terms, on the probative value of expert consensus, and which correspondingly call for a different kind of reply. Quoting Mark Lynas, McIntyre shows us that anti-GMO activist and spokesperson George Monbiot “conceded the point that “it is absolutely true that there’s a scientific consensus on GMO safety”; however, for him the debate “was all about corporate power, patenting, control, scale and dispossession” (Lynas 2018, p.211. Quoted in McIntyre 2021a, p.131). A denier of this ilk, who *does not deny* that a scientific consensus in this area exists, cannot be refuted by insisting to “communicate consensus”. In the same vein, we find passages such as the following:

Though most GMO opponents haven’t studied the underlying science, they claim the results are equivocal. That *the experts can’t be trusted*. That more data have to come in (McIntyre 2021b, p.125. Italics ours).

My concern here is not that caution or even skepticism is irrational, but that this issue has now gone beyond risk-aversion to full-blown science denial. It is one thing to say, “Why take the chance when I have a choice?” (though note that anti-vaxxers make the same argument), but *it is another to say, “All of the work to produce GMOs has been done by evil corporations that are trying to poison us to make a profit”* (McIntyre 2021b, p.126. Italics ours).

Again: the task of rationally replying to these kinds of doubts raises questions different from those elicited by the “tobacco strategy”: it is one thing simply to show that consensus *exists*, and quite another to try to debunk a belief in a conspiracy which would make consensus suspect anyway.

Let us now analyze a final case: that of the anti-vaccine movement. If, following McIntyre’s general characterization of science denialism, we took anti-vaxxers (which are undoubtedly a paradigmatic case of denialism) to present the same traits as those found in the “tobacco strategy”, we should conclude that, from the point of view of their relationship with expert authorities, there are no relevant differences between these discourses. This is, in fact, the prediction that McIntyre’s analysis grid already yielded when comparing the “tobacco strategy” and flat Earthers. But just like in that case where we argued that McIntyre’s assimilation obscured a relevant difference (flat Earthers *do not* appeal to expert consensus as probative), the same suspicion emerges for the case of anti-vaxxers. Here again, as we will see, we are dealing with a form of science denial which does not cast doubt on the *existence* of an expert consensus, but instead on its probative value. Let us revisit a significant incident here, which should not give rise to any suspicion of cherry-picking, owing to

its far-reaching impact: Wakefield's alleged "discovery" that the MMR vaccine causes autism. According to Maya Goldenberg, "Wakefield's credibility in the eyes of vaccine resisters seems to be bolstered by efforts to discredit him. Instead, he is seen as a maverick" — therefore someone clearly in a position *against* consensus —, "speaking truth to power, while the scientific establishment looks suspect in a seemingly organized effort to suppress 'inconvenient truths'" (Goldenberg 2021, p.30; see also p.153). "This view", Goldenberg goes on, "is reinforced by a generalized disdain for the cozy relationships between academic medicine and Big Pharma". In other words, "the amplified pro-vaccine message does not reach its intended audience because it does not address the concerns of the vaccine-hesitant public" (Goldenberg 2021, p.30). But the failure of the tactics of "shutting down dissenting views and amplifying the pro-vaccine message" not only means that they are *ineffective* tactics. In fact, given the specific content of the "concerns" of the specific public, they cannot be tactics which aim at a "rational conversion", because such tactics would, once again, appear as blatantly question-begging. Insofar as Wakefield is perceived as "a brave fighter against both orthodox knowledge and institutional power", as someone who (in the words of a follower) "suffered constant vilification and punishment for questioning the holy grail of vaccinology" (Goldenberg 2021, p.155), insisting on the obvious fact that scientific consensus is against Wakefield's claims can hardly count as a *refutation* of such claims. Far from yielding to the evidentiary power of consensus, "Wakefield's supporters have diligently pointed to the important function of dissenting views in scientific inquiry" (Goldenberg 2021, p.162).

The suspicious attitude towards scientific consensus is certainly not limited to the kind of response which Wakefield's claims receive. In a qualitative analysis of "organised parental groups that campaign against aspects of vaccination policy", Hobson-West found that these "Vaccine Critical groups" "construct trust in others as passive and the easy option. Rather than trust in experts, the alternative scenario is of a parent who becomes the expert themselves" (Hobson-West 2007, p.212). In a similar line, Liza Gross quotes the words of Lisa Kaufman, a medical anthropologist, according to which the persistence of the vaccine-autism link theory is partly due to the fact that "People think if you blindly follow experts, you're not taking personal responsibility" (Gross 2009, p.6). A similar distrust of the medical expertise among anti-vaxxers has been reported and analyzed by Kata (2012): "Common assertions found online included: that vaccines cause illness; they are ineffective; they are part of a medical/pharmaceutical/government conspiracy; and that mainstream medicine is incorrect or corrupt".

If we come closer in time, to the recent COVID-19 pandemic, we find similar suspicions of the evidentiary value of scientific consensus in the face of the conspiracy from which it allegedly results: protesters in the UK opposing vaccination against COVID-19 gathered to hear a professor claim that "vaccines make people sick, you

should not trust the Government, the doctors and the media, they are lying about the Covid-19 vaccine” (Roach and Clifton 2020). So, once again: denying the existence of scientific consensus is not a universal trait of science denial. Denial can take a different form — that of a rejection of the probative value of consensus. Therefore, communicating consensus cannot be a universally applicable response to denialism.

6. Recapitulation and future perspectives

Let us recapitulate our main results. In this article, we have found that:

1. If we turn, as we did in *section 2*, to the texts which are central for reconstructing the “tobacco strategy” (such as Oreskes and Conway’s influential book, which McIntyre himself appeals to), we find that, as we saw in *section 2*, the strategy (a) acknowledges a distinction between experts and laypersons, (b) appeals to a fraudulent “dissent”, and, more importantly, (c) denies the existence of a consensus in certain specific areas, and (d) concedes the evidential value of consensus among experts. So, the ironic and disquieting closeness between the “tobacco strategy” and the mainstream scientific discourse is that, just like the scientific community, this strategy accepts that if scientific consensus in an area exists, then it has evidential value — which is precisely why it needs to claim that, as a matter of fact, it does *not* exist.
2. McIntyre attempts to “merge” (as we saw in *section 3*) the model based on the “tobacco strategy” with the “FLICC” model employed to characterize science denial in general. However, this introduces a tension: the element “conspiracy theories” (the second “C” in “FLICC”) involves a denial of the *evidentiary value* of scientific consensus (insofar as such a consensus is viewed as the result of a malevolent ploy), whereas the “tobacco strategy” acknowledged that value and only denied the *existence* of scientific consensus in certain areas.
3. In the particular case of climate change denial (as we saw in *section 4*), the conspiratorial leaning of remarks such as Trump’s concerning the “political agenda” which allegedly makes climate science unreliable point in a direction radically different from that of the “tobacco strategists” such as Luntz, who, quite on the contrary, invited the public to “defer to scientists and other experts in the field”. Trump’s “playbook” is certainly not that of the “tobacco strategy”, as the latter appears in the very authors McIntyre appeals to.
4. Worse still (and as we saw in *section 5*), paradigmatic forms of scientific denialism such as flat-Eartherism, opposition to GMOs and anti-vaxxerism question even more clearly the probative value of scientific consensus. To varying degrees, in all of these three cases at least *some* of the claims made by denialists

do not even try to obscure the existence of a consensus — a consensus that, instead, they *explain* in conspiratorial terms. According to flat-Earthers, virtually all the scientific community, along with governments, agrees that the Earth is round; according to anti-vaxxers, the scientific mainstream hides the risks of vaccines and punishes brave proponents of minority positions such as Wakefield's; at least some GMO opponents explicitly admit that a scientific consensus concerning their safety exists. In all of these cases, it is clear that the existence of a consensus is not denied, whereas its probative value is. Furthermore, in the specific case of flat-Earthers, the probative value of scientific consensus appears as even less acceptable, insofar as they deny that there is an epistemically crucial distinction between experts and laypersons.

Now, at this point our proposal might be objected. Indeed, our own reconstruction, based on a direct reading of some crucial texts, has emphasized that the “tobacco strategy” hinges on denying the existence, not the evidentiary value, of consensus in certain areas, such as the tobacco-cancer link and AGW. And this is why, on this basis, we subsequently criticized McIntyre (in section 4) for sliding towards a different problem: that of denial of evidentiary value, which requires correspondingly different replies. Now, as is obvious, the question might emerge as to why our reconstruction is preferable to McIntyre's — which does not emphasize in the same degree the aspect “denial of existence” in the tobacco strategy. Can we not simply say that McIntyre is, along all his text, consistent with *his own* reconstruction of the “tobacco strategy”? We believe that this concern can be tackled from different angles.

The first angle is the question whether we acknowledge or not that *historical* evidence is relevant. If we only want to do philosophy on an *a priori* basis, then “tobacco strategy” will be the name of a theoretical construct which McIntyre employs to illuminate certain allegedly universal traits of science *denial* (which do not necessarily include a denial of the existence of consensus along with a *recognition* of the evidentiary value of consensus) and it will be pretty irrelevant that the actual historical evidence does not fit that construct. This might be a reply, but it seems far beyond what McIntyre would be willing to accept. He appeals rather explicitly to what he takes to be actual historical evidence, so it seems fair enough to criticize his proposal precisely on this ground: if he wants to analyze all science denial in terms of the “tobacco strategy”, then we are entitled to correct his claims by appealing to what such a strategy actually amounted to.

The second angle is the question whether, historically correct or not, there are *theoretical, conceptual* grounds for presenting something called “tobacco strategy” as McIntyre does, i.e., as a discursive move which might be associated both with a denial of the existence of consensus and with a denial of its evidentiary value. *Even if* it were historically correct to claim that such a strategy (as deployed, as a

matter of historical fact, by tobacco companies since the 1950s) actually included remarks in line with, e.g., Donald Trump’s suspicions about the “political agenda” of the scientific community (which is to say: even if this can be considered a strategy, instead of different strategies used together), the question would remain as to why we should not analytically distinguish two elements, “denial of existence” and “denial of evidentiary value”. Yes, it is possible to lump them together under a very general description, by claiming that “the” strategy in question says *something* about scientific consensus. But, why *should* we do such a thing? If our interest is, again, to propose a rational reply to deniers, to show how exactly they are in the wrong, then we cannot treat on similar grounds an argument (the denial of existence) which can be replied, without begging the question, by pointing to numbers of agreeing scientists, and another argument (the denial of evidentiary value) against which such a reply would indeed be blatantly question-begging.

Due attention to these particularities imposes, in turn, the need to tackle, in future work, differentiated strategies for countering such denialist discourses in their specificity.

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Notes

¹In Rorty's words, he uses "the distinction between arguing with people and educating people to abbreviate [...] the distinction between proceeding on the assumption that people will follow your arguments and knowing that they cannot but hoping to alter them so that they can" (Rorty 2000, p.19).

²One could easily assume that the flat-earthers are the liars and the AGW deniers genuinely believe that such phenomena do not exist. However, there is a crucial aspect to consider. There is a clear financial incentive in denying climate change: since the use of fossil fuels significantly contributes to carbon dioxide emissions, acknowledging this reality would entail accepting the necessity of an energetic transition and, consequently, a loss of profits for those who benefit, for instance, from the oil industry. In this context, the memo by Frank Luntz for the Republican Party serves as a notable example. This does not imply that there are not individuals who sincerely believe in the non-existence of AGW, but it undoubtedly shows that there are those who are fully aware of the scientific consensus, perceive it as probative, and yet continue to deny it for personal gain. In contrast, when it comes to flat-earthers, there seems to be no financial motive in defending a flat Earth. To the best of our knowledge, we have not found any evidence indicating that flat-earthers lie about their convictions. Moreover, McIntyre does not mention such motives in his book.

³Hoofnagle's text does not explicitly state that the five tactics outlined are present in all forms of scientific denialism. Instead, they ambiguously refer to them as "five general tactics" that are "used by denialists to sow confusion", and they trace their use throughout different denialist discourses "from creationists to climate change denialists": the presence of logical fallacies is exemplified by creationism, although it is not limited to this discourse; we find the postulation of impossible expectations among climate change denialists, but it is not a hallmark of this particular discourse; the characteristic of recourse to selectivity can be found in HIV/AIDS denialism as much as in that referring to the theory of evolution; the appeal to conspiracy theories can be traced throughout such diverse forms of scientific denialism as those referring to climate change or those speaking of the "illuminati". Thus, this proposal would not, in principle, be subject to the problems that, as we shall see, are generated by the

bolder claims with which McIntyre commits himself.

⁴Let us emphasize the phrase “for the sake of argument”. As we argued in a previous article (Edelsztein & Cormick 2023, p.13-14), the FLICC analysis grid is not particularly neat. The category of “logical fallacies” is too broad to be an informative tool for identifying specific errors. Moreover, it overlaps with references to particular fallacies, such as relying on fake experts (which is a fallacious use of arguments “from the position to know”) and cherry-picking (a form of fallacious reasoning that involves inductive generalizations).