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ABSTRACT: Unlike in the recent past, today it is controversial to hold a denialist position on the scientific consensus that we humans are warming the Earth. How did this change come about and what role has argumentation played? In exploring these points, this presentation will discuss with those who argue that a change of consciousness in relation to climate change has occurred and must occur through individual persuasion (John Dryzek, 2013; Lee McIntyre, 2021). We also review Jean Goodwin's (2014; 2015; 2019) argumentative analyses of climate controversies where scientists faced skeptics.

KEYWORDS: change, climate change, cognitive environment, consciousness, rhetorical argumentation

1. INTRODUCTION

Positions with respect to an issue can be placed on a spectrum that allows us to understand which are the radical positions and which are the accepted ones (the status quo). In this sense, what is the spectrum with respect to the issue of whether anthropogenic climate change is happening? Climate change is one of the main topics in contemporary public discussion. Today, governments and corporations around the world are called upon to adopt environmental policies and to join international agreements in the fight against climate change. This suggests that, on the issue of climate change, the positive position is at the center of the spectrum, while the negative position is at the limit. In other words, it is controversial today to take a position against the scientific consensus on anthropogenic climate change. In this sense, here we identify the pro-climate change position as part of the current status quo, while we understand climate change skepticism / denialism as extremist positions. However, this has not always been the case; on the contrary, pro- climate change positions used to be on the margins of the spectrum, as extremists. In other words, the burden of proof lies now in the denial position. How did that change?

We are concerned with understanding how the pro-climate change position managed to become part of the status quo, displacing skepticism/denialism to the extreme edge of the spectrum. It is worth making a clarifications first: saying that the pro-climate change position is part of the status quo does not mean that skepticism has been defeated. On the contrary, different authors (Capstick et al., 2015; van der Linden et al., 2017; Levy, 2022) point out that manipulation and disinformation tactics targeting the scientific consensus on climate change have been successful in producing skepticism. Neil Levy even claims that "[g]iven the likely effects of climate change on the world, their success may be the biggest tragedy of the past half century" (Levy, 2022, p. 6). Despite this, such tactics have not succeeded in displacing belief in climate change to the extreme edge of the spectrum.

We will argue that the pro-climate change position became part of the status quo as scientific reasons modified our cognitive environment. To develop this argument, we will first deal with recent positions on what it means to "change minds" with respect to climate change; on the one hand, we will discuss the position of John S. Dryzek, who argues that green radical discourses have succeeded in changing people's consciousness at a very limited level. On the other hand, we will discuss the position of Lee McIntyre (2021), who proposes that the best way to change the mind of a climate denier is through personal encounters.

Before presenting the insights of these authors, it is worth distinguishing our perspective on what it means to change minds from other perspectives within argumentation studies. The question of whether arguments are sufficient to change someone's mind is prominent for argumentation theories (Cf. Dutilh Novaes, 2023). While much is being said about it, the dialectical perspective has answered in the affirmative by wielding the idea of critical argumentation. Here the basic point is that, through some kind of critical discussion, one side can rationally persuade the other to change her mind. Walton expresses it like this:

> A proponent in a dialog persuades a respondent to accept a particular statement in this special sense when the proponent presents an argument containing only premises that the respondent is committed to, and uses this argument to get the respondent to become committed to the conclusion of the argument. Presumably, the respondent was not committed to this statement previously. So persuasion, in this sense, refers to the respondent's "conversion" so to speak, or the change in his commitments. Before he was not committed to this particular statement, but now he is. (Walton, 2007, p. 29)

According to this, rational persuasion is understood as a change of commitments resulting from the respondent's critical evaluation of an argument offered by the proponent. Similarly, although changing the term of persuasion to that of convincing (van Eemeren & Grootendorst, 1984), pragma-dialectics considers the rational change of opinion as part of their model of critical discussion. For them, one of the possible ways of resolving a difference of opinion (in the concluding stage) is through the change of opinion of an antagonist who fails (in the argumentation stage) to conclusively attack the protagonist's standpoint and decides to accept it. In sum, the dialectical perspective understands the rational change of mind as a possible outcome of critical discussion.

In contrast to this perspective, here we claim that a change of mind can be the outcome of rhetorical argumentation. This means that rhetoric -the modification of ideas through discourse- can modify an audience's opinion. Moreover, rhetoric can modify the cognitive environment in such a way as to change epistemic, social, and personal values in a community (Tindale, 2016). Thus, the idea of changing minds distinguishes our perspective not only from dialectics, but also from views of rhetoric that focus on "effective persuasion". This is, following Walton (2007), when a speaker persuades an audience to accept a conclusion, or carry out an action, using arguments that the audience already considers strong. In contrast to this view, here we do not consider effective persuasion as the aim of rhetorical argumentation.

2. CHANGING CONSCIOUSNESS THROUGH DISCOURSE

Dryzek (2013), characterizes green radicalism as a position that rejects the "basic structure of industrial society and the way the environment is conceptualized therein in favor of a variety of quite different alternative interpretations of humans, their society, and their place in the world" (Dryzek, 2013, p. 16). Thus, he analyses four categories of green radical discourses: 1) the "ontology" of the discourse, i.e., the basic entities whose existence is recognized or constructed, 2) the assumptions about natural relationships, 3) the agents related to the issues and their motives, and 4) the rhetorical devices deployed in the discourse.

Dryzek distinguishes between two types of green radical discourses: on the one hand, there is green consciousness, which seeks greater ecological sensibility at the individual and cultural levels. On the other hand, there is green politics, which seeks a structural change of the capitalist model through political action. These general types of discourse constitute a green public sphere that is essentially diverse (Torgerson, 1999; Dryzek, 2013), in that the content of ecological sensibility and structural change varies substantially with the discourse. Nevertheless, all forms of green radicalism are based on the belief that there are global ecological limits given by the Earth's finitude (Dobson, 1990; Dryzek, 2013).

In this sense, Dryzek is interested in understanding how these discourses manage to change people's consciousness, that is, the way people experience and think about the world. However, reasoned arguments may not be just enough to achieve that. In his words: "[r]easoned argument can only take us so far along the road. The rest of the path may require rhetorical strategies that reach beyond reason to passion" (Dryzek, 2013, p. 200). Accordingly, his analysis of rhetorical devices of green radical discourses is relevant to our discussion. Dryzek founds that both green consciousness and green politics discourses use organic metaphors, which seek to make people experience the world as if they were animals, or that portray the world as not reducible to its parts in which living beings interact in complex ways. They also employ distinctive rhetorical devices. Green consciousness discourses appeal to emotions by seeking a more empathetic and intuitive orientation towards nature by means of personal stories, myths, spiritual ceremonies, art, and poetry. On the other hand, green politics discourses consider that the current system can learn to be ecologically rational, appealing to ideals of progress beyond the current industrial order towards sustainable development as well as ecological modernization.

However, Dryzek's diagnosis is that green radicalism has been successful mainly in promoting a greener lifestyle, i.e., everyday consumer behavior and how children are educated. In addition, this radicalism has succeeded in changing certain public attitudes such as: awareness of ecological limits, sensitivity to the risks generated by the industry, and recognition of the possibility of a more convivial way of life (Dryzek, 2013, p. 225). Moreover, despite the limited impact of the governing green political parties, their discourse has transformed the terms of the political debate, making other parties conform to their positions on environmental issues. Hence, Dryzek claims:

> In the last four decades or so green radicalism has come from nowhere to develop a comprehensive critique of the environmental, social, political, and economic shortcomings of industrial society. As such, it represents perhaps the most significant ideological development of the late twentieth century. (Dryzek, 2013, p. 227)

Despite this ideological development, Dryzek argues that changing consciousness is not enough to achieve the desired change sought by green radicalism. Moreover, he finds it ironic that the greatest impact of the change in consciousness is at the least radical level: consumer behavior. In his words: "it is the lifestyle greens who have had the most effect, not the more radical forms of green consciousness" (Dryzek, 2013, p. 202). This shows how environmentalist positions can be placed on a spectrum in which the status quo seems to be the position that focuses on the agency of the consumer rather than the manufacturer or the State.

Dryzek's claim that changing consciousness is insufficient to achieve the desired (structural) change is supported by three reasons: first, there is the practical problem that it fails to convince large numbers of people to change the way they relate to the world. Second, good intentions are never enough to guide action on ecological issues (which are inherently complex). Third, a change in consciousness does not indicate how to move from the current disequilibrium to the desired harmony with nature -although it would be sufficient to maintain harmony once we get there. In this sense, he claims

> The problem here is that social, political, and economic structure is more than just a reflection of the attitudes of society's masses or elites, and so changed sensibilities will not necessarily lead to structural change (Dryzek, 2013, p. 205).

Dryzek's analysis is interesting in that it shows the argumentative strategies of green radicalism and assesses in a positive way the "ideological development" that these discourses have achieved. In other words, the author shows how the green discourse has improved our ecological sensitivity. Thus, we agree with him that these discourses have succeeded in changing our consciousness, i.e., the way we live and think about the world. We also agree that this change of consciousness is necessary to improve public and political culture, but not sufficient to achieve structural change.

However, we find two problems in Dryzek's proposal; the first is related to the distinction he makes between change of consciousness and structural change. For him, a change of consciousness refers to the process of persuasion that seeks to improve ecological sensitivity at the individual level. In this sense, he contrasts this process promoted by "the greens" with the "green policy" which seeks structural change. Although it is important to distinguish between these two kinds of changes aimed in the discourse (consciousness change and structural change), identifying change of consciousness with individual persuasion fails to appreciate that both types of discourse have succeeded in that kind of change. Instead, here we argue that radical discourses have indeed succeeded in changing people's consciousness, their ecological sensitivity, even though they are insufficient to bring about any structural change. However, for us, this does not mean that they have succeeded in convincing individuals about climate change, but that they have succeeded in modifying our cognitive environment, so that they have fixed certain values that now influence our personal values.

The second problem with Dryzek's proposal has to do with the way in which green discourses have succeeded in changing people's consciousness. According to him, reasoned argumentation is insufficient to achieve that. In addition, rhetorical strategies that appeal to passion are needed. Although Dryzek does not lay out a concept of reasoned argument, he does oppose it to appeals to emotions, indicating that argumentation appeals to reasons. For us, however, this idea is problematic, as it reduces the rhetorical impact just to

passion/emotion. In opposition to this idea, and in line with previous discussion, different perspectives on argumentation consider that rhetorical strategies are aimed at effective persuasion, not necessarily at emotion. On the one hand, from the dialectical perspective, Walton (2007) points out that effective persuasion is a possible outcome of rhetorical argumentation strategy, while van Eemeren (2018) points out that rhetorical effectiveness is one of the purposes strategically pursued in argumentative discussion.

On the other hand, from a rhetorical perspective, we point out that rhetorical strategies have the general aim of addressing audiences in an effective way. As should be noted, these perspectives do not limit the scope and content of rhetoric in the way Dryzek does by identifying rhetorical strategy with appeal to emotion. On the contrary, for these perspectives, persuasion is effective by other means different that appealing to emotion. For example, appealing to the ethos of celebrities that promote greener lifestyle and awareness of environmental issues it is also an effective way to convince an audience. More importantly, effectiveness is not irrational, as suggested by the opposition between reasoned argument and rhetorical strategy. Instead, for us, rhetorical argumentation is not reduced to emotion, nor is it irrational, although it can be used in a positive or a negative way. This is why we claim that rhetorical argumentation can indeed achieve a change of consciousness insofar as it manages to change personal values by making present the relevant social and epistemic values (Tindale, 2016).

3. ARGUMENTATION AGAINST CLIMATE DENIALISM

Lee McIntyre (2021) is interested in addressing current cases of science denial in the US. He builds on the consensus of previous research to define science denial by five common characteristics:

1) Cherry-picking evidence,
2) Belief in conspiracy theories,
3) Reliance on fake experts (and the denigration of real experts),
4) Committing logical errors, and
5) Setting impossible expectations for what science can achieve (McIntyre, 2021, p. 52).

With this definition, McIntyre seeks to show that science denial is not a problem of ignorance/lack of evidence, but a matter of identity. In his words:

> Science deniers are not just ignorant of the facts but also of the scientific way of thinking. To remedy this, we must do more than present deniers with the evidence; we must get them to rethink how they are reasoning about the evidence. We must invite them to try out a new identity, based on a different set of values. (McIntyre, 2021, p. 76).

Accordingly, he argues that the best way to change the identity of a denier is through personal encounters that first create a trusting relationship on which the scientific evidence can then be presented and thus correct information deficits. Now, McIntyre claims that "[c]limate change denial represents the biggest, most important case of science denial in our time" (McIntyre, 2021, p. 110). The author explains that this case began as skepticism resulting from a campaign generated by political and economic interests that misinformed the US public about the scientific consensus that anthropogenic climate change is

happening. Today, however, there is a new form of denialism that doubts not so much the existence of climate change but more about whether we should do anything about it. This denialism is, for McIntyre, not a matter of evidence or belief but a matter of collective identity, which should not be categorized as skepticism. In his words:

> Climate skepticism is thus not actually skepticism at all. In the face of an avalanche of evidence, continuing to shill for a contrarian point of view just because you hope it will be right is outright denialism (McIntyre, 2021, p. 121).

McIntyre offers three recommendations to have a personal encounter with a science denier:
i) Consider that science denialism exists on a spectrum of persuadability. This means that denialists do not necessarily share the same information, ideology, reasons, and purposes;
ii) Consider that misinformation and disinformation are amplified by social media, so that denialism seems bigger than it actually is; and iii) Be persistent in the conversation, i.e., do not be content with resolving an information deficit, but try to change the identity. In line with these recommendations, McIntyre organized a conversation with Pennsylvania coal miners about climate change. This experience allowed him to reiterate the importance of personal encounters. In his words, "[t]he idea of meeting one another as humans [...] and planting the seed of doubt so that people could change their minds seemed key" (McIntyre, 2021, p. 150). Moreover, these conversations led him to a recognition of the distinction between beliefs and values. Thus, it seems that the issue of climate change is not about beliefs, but about values; it is not about convincing someone to believe something but to value something. In McIntyre's words:

> maybe the issue wasn't just getting deniers to change their irrational views but to delve a little deeper into understanding how those views were a function of their values, so that we could encourage them to care more about something that would affect us all. (McIntyre, 2021 p. 150).

In sum, McIntyre's position seems to be that a change of belief, related to the understanding and acceptance of scientific evidence, is not enough to change the mind of the science denier. What is necessary is a change of identity, that is, the acceptance of other values, which calls for a trusting relationship within a personal encounter. Moreover, in the case of climate denialism, changing minds means expanding the circle of concern. Thus, McIntyre argues that "at some level, the process of trying to change someone's beliefs is the same as trying to change what they care about" (McIntyre, 2021, p. 156).

McIntyre is right to point out that, in the case of climate change, it is necessary to consider both scientific evidence and collective identity -what we collectively value. Thus, to understand the change in consciousness regarding climate change it is necessary to consider the way in which our cultural cognition mechanisms (Kahan, 2012) have determined our positions on environmental issues. Furthermore, we share McIntyre's point that "[p]erhaps there aren't any ideal argumentative strategies for that [changing someone's belief and values]" (McIntyre, 2021, p. 156). However, we are less optimistic than he is about the effectiveness of personal encounters in bringing about such a change.

For us, individual persuasion fails to change identity in the way McIntyre believes. His personal encounters with the miners do not account for a change in what they value or believe. On the contrary, they reveal that there are already some levels of agreement on the seriousness of climate change, as well as some value for the environment. Thus, while McIntyre is right to consider values in addition to scientific evidence, there is no indication

that personal encounters will make the desired change when discussing with a climate denier. Moreover, as Dryzek notes, there is a practical difficulty of convincing large numbers of people with face-to-face encounters, especially given the argumentative skills needed to achieve one-on-one discussions that succeed in changing consciousness. In this sense, rather than relying on individual argumentative skills to address the problem of climate denialism, it is worth focusing on analyzing the way in which the cognitive environment has been modified.

From the discussions with Dryzek and McIntyre, it is possible to appreciate the role of argumentation in understanding the change of consciousness with respect to climate change. For the former, radical green discourses have achieved an ideological development, a change of consciousness, which is reinforced today through consumer behavior, new generations' education, and the environmental political debate. For the latter, individual argumentation is the best way to continue the change of consciousness, even against denialism. In this case, such argumentation involves at least three issues: a relationship of trust, the acceptance of scientific evidence, and the expansion of the circle of care. Despite apparent differences in considering argumentation in relation to climate change, both authors are close to the dialectical perspective that focuses on dialogue as a way to change the mind of the interlocutor. Furthermore, both authors consider that to achieve this change it is necessary to go beyond scientific evidence. On this last point we agree, we should think beyond the scientific evidence, and consider the values that determine our environmental positions, if we want to understand the way in which argumentation contributes to the positioning of the pro-climate change stance. However, contrary to Dryzek and McIntyre, our analysis of the change of consciousness is rhetorical, in the sense that it does not focus on individual (dialectical) argumentation, but on rhetorical argumentation that introduces new information and values into the cognitive environment we inhabit.

4. CLIMATE CONTROVERSIES

The pro-climate change position is scientific, i.e., it explains a natural phenomenon that can be empirically confirmed, namely that human activities are the main driver of climate change. We suggest that, in order to understand the social shift from rejecting to accepting this position, it is useful to analyze rhetorically the way in which this position was introduced and reinforced in our cognitive environment. This involves considering both the scientific argumentation against the challenges of climate skepticism, and the way in which climate scientists build trust in the audience. Both of these issues have been studied by Jean Goodwin (Goodwin & Dahlstrom, 2013; Goodwin, 2014; 2015; 2019) from a perspective of argumentation close to ours.

Drawing on literature on science communication, persuasion, rhetoric, and cognition, Goodwin & Dahlstrom (2013) propose two general strategies that can help climate scientists achieve greater ‘communicative trust’, which they define as "a willingness to consider a message favorably based on characteristics related to the message source, in contrast to characteristics of the message content." (p. 153, italics in the original).

These strategies are distinguished in relation to the type of audience that the science communicator seeks to persuade. On the one hand, with respect to audiences that already trust science, scientists can enhance those factors that determine the perception of science as a

source of knowledge and expertise, and as an honest and open institution. Such factors include expertise, experience, clear delivery, citation of evidence, humor, similarity to the audience, etc.

On the other hand, with respect to audiences who are distrustful and critical of science, scientists may consider the following rhetorical principles: 1. Make yourself vulnerable, i.e., willingly increase vulnerability to the audience. For example, by engaging in discussion at the risk of being attacked, and presenting reasons to the audience; 2. Empower your audience by creating language they can understand; 3. Take responsibility for being wrong, as the expert who shares his or her changes of mind, uncertainties, and mistakes is more credible; and 4. Start small, as risk to the audience is reduced when they are invited to consider the least consequential issues first.

Goodwin (2014; 2015) discusses these sorts of strategies that help the climate scientists gain audience trust, focusing on the televised debate between climate scientist Stephen H. Schneider and an audience of 52 self-identified climate change skeptics (Insight, 2011). Thus, she (2014) describes the two challenges that Schneider faces in his exchange with the skeptics; the first is the distrust expressed in charges of bias due to personal interest, financial interest, or political interest. The second challenge is the strategy known as "Gish Gallop" in which the audience bombards the speaker with different considerations for a limited period of time.

Accordingly, Goodwin identifies different strategies that Schneider uses to deal with distrust, the "Gish Gallop" strategy and disagreement in general: first, he exercises "aggressive trust" in relation to his audience, i.e., he presumes the good faith of the skeptics, consistently expressing trust that they are not guilty of the argumentative misconduct (like bias) of which he is accused by them. Second, he resorts to metadiscourse[1] to clarify his own discourse, but also to prevent the audience from inferring that he does not have answers to all the issues raised in the debate. For example, he is explicit about the issues he is addressing, lists his arguments, and reiterates issues he has already responded to. Third, Schneider uses a “strategy of invitation” (Goodwin, 2015), that is, the attempt to reduce distance from the audience. Thus, he follows his own advice (in Schneider, 2009) of explaining technical terms in accessible language to achieve better understanding in the public arena. Additionally, he praises laypeople when raising good scientific questions and exhibits his personal concerns about the lack of civility in the public discussion on climate change by narrating his own negative discussion experiences.

While the strategy of invitation seems to be appreciated by and effective for some audience members, there were others unwilling to join in the way scientists look at the evidence. Moreover, they justified their distrust for scientists. Schneider deals with this challenge by exercising authority in those issues that are simply not debatable for him. Thus, although he is impersonal and apologetic, he always points out when someone is wrong or is saying something false. Also, he has the opportunity to present and exercise

[1] Linguist Ken Hyland (2017) claims that “metadiscourse” has a rhetorical function that should be further considered. He defines the term as a “commentary on a text made by its producer in the course of speaking or writing and it is a widely used term in current discourse analysis and language teaching” (2017, p. 16). For him, although it is an essentially fuzzy category, it always refers to a use of language out of consideration for the audience and reveals the way in which the writer understands the community addressed. More specifically, it reveals awareness that the audience may need elaboration, clarification, guidance, and interaction. (p. 17).

his notion of scientific credibility. Thus, to the question of why trust a scientist, raised by the audience, Schneider states that those who claim to have the truth and certainty should be distrusted. On the contrary, he expresses the complexities of climate science while showing its limitations. By doing so, he relates scientific credibility to modesty. In answers to other questions, he reiterates this relationship, pointing out that scientists who overstate are irresponsible. Thus, when asked about sources of information, he dismisses those sources that are highly polarized and thus do not follow the norms of civic dialogue.

Goodwin's analyses of the Schneider vs. Skeptics debate are interesting in that they make explicit the strategies used by the debating parties to deal with the disagreement. Moreover, she contrasts this case with the typical advice (Lamberts, 2014) for climate scientists to stop arguing with the skeptic and use instead more effective communication techniques. In her words, this case demonstrates "to the participants and the wider audience that something like a worthwhile argumentative interaction is possible, even among those who deeply disagree" (Goodwin, 2014). Although this optimistic conclusion contrasts with
the view that disagreement about climate change is deep (Fogelin, 1985), it is consistent with her thesis that there can be good argumentation without resolution of disagreement (Goodwin, 1999). In her words: "perhaps changing minds – resolution of the disagreement – was not the point of the interaction" (Goodwin, 2014).

But are these strategies useful to confront a skeptic who is a very skilled arguer? Goodwin (2019) analyzes a televised debate between a climate scientist (Maslin) and a "climate sophist" (Morano), who has two characteristics: on the one hand, he has a relish for disagreement that allows him to doubt even the scientific consensus, and on the other hand, he possesses "Argumentative Content Knowledge" (ACK). This means according to Goodwin:

> knowledge of a domain selected and structured in ways that are most germane for its arguability in a range of settings. ACK allows the arguer to transform content knowledge into argumentative representations (e.g., issues, arguments/refutations, evidence) and then to select appropriate devices from a presentational repertoire to embody these representations in discourse (e.g., argumentative indicators, patterns of organization), all in ways well adapted to the audience (e.g., their conceptions, interests, attention span). (Goodwin, 2019, p. 54)

In this case, the sophist has good knowledge about climate science, environmental public policy, the dynamics of international politics, but also about climate controversies: positions, arguments, refutations, strategies, style, etc. Thus, the ACK that would explain why, in this case, the sophist is better than the climate expert. Specifically, Goodwin recounts four strategies that account for Morano's ACK: i) he frames the debate around the lack of scientific consensus, ii) he has refutations in place for most of his adversary's points,
iii) he provides scientific support or testimony, and iv) he maintains composure in the debate. Against this scenario, Goodwin prescribes some alternatives in the face of sophistry like: becoming as skilled and eager for disagreement; debating while ignoring disreputable views; and refusing to debate while assuming the consequences: "it allows the sophist to proclaim victory by default and undermines the public appearance of reasonableness that democratic societies depend upon to legitimate decisions." (2019, p. 59).

The notion of ACK is useful both to justify our interpretations of the discussion and to analyze the scope of the argumentative strategies used. Then this notion leads us in the right direction by considering the effect of continuity of argumentative discussions. Using Goodwin's metaphor, this is to consider the well-cultivated ground of the discussion. Using

the metaphor we have been developing in here, this is to consider the distinctive cognitive environment that the discussion itself creates, in which we can find expressions of reasons and values, as well as styles of thinking. Thus, ACK allows us to focus on the experience and understanding that discussants have as an audience and then use as speakers to deal with disagreement. Moreover, it is not necessary to be a speaker, a debater, to gain this kind of knowledge. Rather, from our very experience as an audience in society we can recognize patterns in public discussions.

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