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PhD Dissertation

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Anthropocene Conjunctions

Scientist Activism and Ethos in the Climate and Ecological Emergency

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Introductory Chapter

1. Introduction

As I began writing this introductory chapter, I was sitting outside a café in Berlin on a scorching hot June day in what would turn out to be the warmest month of June in recorded history on Earth (Erdman, 2023). Accompanying me was a fellow PhD student and close friend – her with a printed (and heavily underlined and commented) version of Sara Ahmed's essay "Happy Futures, Perhaps," me tapping away at my laptop. We were stopping over in Berlin for a few days on our way back to Copenhagen after having attended the European Society of Rhetoric conference in Tübingen. A definite highlight for us at this conference was American scholar of feminist rhetoric Cheryl Glenn's moving and personal presentation on her work on hope (Glenn, 2018). This had sparked discussions among the two of us about the trappings, necessities, and/or possibilities of hopefulness.

Thus, interjecting my idle attempts at filling a blank Word document, my friend shoved her text in front of me, pointing to a quote with a huge exclamation point in pen blue ink in the margin:

Perhaps the queer point would be to suggest that we don't have to choose between pessimism and optimism. We can explore the strange and perverse mixtures of hope and despair, of optimism and pessimism, within forms of politics that take as a starting point a critique of the world as it is and a belief that the world can be different. (Ahmed 2011, 161)

Incidentally, just a few days before, a group of scientist activists based in the Nordic countries had published the short paper "Beyond being analysts of doom': scientists on the frontlines of climate action" in the journal *Frontiers of Sustainability* (Artico et al., 2023). Departing from a minor series of interviews with active members of the social movement Scientist Rebellion in various countries, the authors reflect on the motivations and challenges of moving away from the role as analysts and towards radical engagement:

While we focus on actions that will produce more immediate results given the urgency of the situation, we also recognize the need to transform our institutions of knowledge to better advocate for such action. Both emerge from hope, curiosity and passion for the world we inhabit. (Artico et al., 2023, p. 5)

I take these academic encounters at this specific moment in time as the starting point of this introductory chapter in order to strike at the heart of this dissertation's underlying reason to keep growing and becoming in the course of the last three years: When things are coming apart on an overwhelmingly massive scale, what do we do and where do we find the will to do it? More specifically, in my work on the rhetoric of scientist activist movements in the climate and ecological crisis, how do we retain hope for the world and the impure connections of knowledge, politics, and the biosphere? Perhaps it has been a misstep not to more explicitly incorporate a queer lens such as Ahmed's. Queer theory and activism, and queer activist theory, has always worked between the hopeless and the hopeful, denying naïve optimism but not giving up the struggle. It has had to. Similarly (although of course with important differences), the climate and ecological crisis - the climate and ecological *emergency* – is exactly calling for work in the uncanny crevice between despair and hope, between destruction and the possibility of a better world. The scientist activists quoted above feel the urgency to act on their knowledge deeply and attempt to work from the affective registers of hope, curiosity, and passion. They do so in order to "activate academia" (Artico et al., 2023, p. 4) doing what they deem possible, meaningful, and effective in the overwhelming Anthropocene and the multiple crises that it entails, right here, right now, propelling scientists and academics along with the rest of civilization into a potentially "ghastly future" (Bradshaw et al., 2021).

So, here *I* am, in the thrall of the ever moving and breaking landscapes of science and scholarship, activism and analysis, rhetorical criticism and critical rhetoric, climate and environment and the beginning of some kind of end times. Outside a café table in a European capital in the sweltering heat of the Anthropocene. With a friend. With fear and with hope. This hope is in the dark, to follow Rebecca Solnit's (2006) phrasing, in the sense that darkness not only connotes bleakness and pessimism but also the unknown, the unpredictable. We risk something by hoping, and in risking there is fighting. Thus, "hope is an ax you break down doors with in an emergency" (p. 4). Yes, let's break down some doors. Let's escape into the who-knows-what. At least, we could try.

I bring up hope specifically as the introduction of this introductory chapter because it is exactly hopeful urgency and the ambivalence of fumbling in the dark that has come to characterize the dissertation work you are about to read. This sense of urgent ambivalence and ambivalent urgency has led me to examine the following overall research questions:

How do contemporary expressions of scientist activist rhetoric unfold and function within the broader spectrum of knowledge work and climate politics? How is scientific ethos (re)negotiated in scientist activist rhetorical practices in the climate and ecological emergency? What would productive trajectories for scientist activism in times of crisis look like, and how can we get there?

This introductory chapter serves as a reflexive introduction to how I have approached these questions in the four research articles of this PhD dissertation. Although I do not wish to delve too deeply in anecdotes and essayism like in the paragraphs above (don't worry, I'll be more or less scholarly from now on), it is important to stress that this dissertation has grown from unrestful soil in exploring these questions, in constant contact with its evolving and elusive present. Indeed, it grows still. I hope so, at least.

This introductory chapter is structured in five sections. Following this introduction to the dissertation, I move on to a discussion of my rhetorical-critical positionality and strategies for analysis, including some elaboration of central concepts in the dissertation. I then turn to a deeper discussion of the sense of rhetorical ethos informing the dissertation's treatment of scientist activism. Lastly, I outline the content of each of the four articles comprising this dissertation before turning to the final section on "Conclusions and Openings".

2. Rhetorical-Critical Positionality and Strategies for Analysis

In a recent comment in *Nature Climate Change*, communication scholar Anabel Carvalho (2023) notes that changing specific words or phrases in a given text – say, 'climate change' to 'global warming' – to see how this wording is perceived across groups in controlled

language experiments is an insufficient way of studying how language works, or does not work, towards mitigating climate disaster. Instead, Carvalho points to the "need to better understand how discourses on climate change — and on the many issues associated with it —actually perform particular (situated and contingent) social functions within certain social settings" (p. 5). Throughout my PhD research, it has been my strategy to set out from the disciplinary field of rhetoric to do something like that: Investigate how rhetoric in relation to climate, science, and politics functions and unfolds in specific situations and contexts, specifically as this pertains to scientist activists' rhetoric.

I see this as a primary strength not only of rhetorical studies but also of environmental humanities as such. As J. Andrew Hubbell and John C. Ryan argues at the onset of their *Introduction to the Environmental Humanities* (2021), "trans-, inter-, and multidisciplinarity will be more productive with a solid grounding in the core disciplines" (p. 1). I will return to this need for cutting across disciplines inherent to a meaningful environmental and climate humanities approach. For now, I will second Hubbell and Ryan's point and note that the core discipline in which I am grounded is rhetorical studies. Further, following Paré et al. (2009) who describe the doctoral dissertation as a "multigenre, responding to multiple exigencies, functioning in multiple rhetorical situations, addressing multiple readers," (p. 184) I see multiple audiences for my dissertation work. These audiences are not only to be found in- and outside of rhetorical studies but in- and outside academia as well. I aim to bring my dissertation work in conversation with activists and the wider public through dissemination activities and participation in debates and movement activities. (I elaborate extensively on this in the dissertation article "Impure Methodology".)

Below, I 1) comment on methods and strategies for analysis that I find inherent to rhetorical criticism today and on which I draw in various ways in the four dissertation articles. 2) I then put these methods and strategies in conversation with Stuart Hall's notion of conjunctural analysis to show how what I here call the 'sweltering core' of rhetorical criticism is eminently positioned in terms of linking up with other humanities approaches and beyond. I then 3) comment on rhetorical studies in relation to ideas about the Anthropocene, before 4) returning to the question of trans-, inter-, and multidisciplinarity with an ambition of tying together the rhetorical and the conjunctural in the Anthropocene. Lastly, I 5) offer some remarks on my understanding of the term

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activism. The overall purpose of this section 2 is thus to position the dissertation's articles within current research environments, in- and outside the rhetorical community, as well as in the unique and bleak moment that the climate and ecological emergency presents.

2.1 Rhetorical Criticism at its Sweltering Core

Rhetorical criticism is sometimes but not always regarded as a research method. Some see focus on method as a distorting influence on the rhetorical critic's mind; Karlyn Kohrs Campbell (2010) has gone so far as to conclude that "There are no methods – only language and critics" (p. 101) and David Zarefsky (2006) suggest we think of rhetorical criticism "not as a method but as an attitude" (p. 385). Others, however, refer to rhetorical criticism as "a qualitative research method" (Foss, 2009, p. 6). Disciplinary debates and discussions about the differences and relations between method, object, theory, and criticism have proliferated in modern rhetorical studies (Bineham, 1990; Campbell, 2010; Gaonkar, 1990; Jasinski, 2001b; Villadsen, 2002; Wilson, 2020). To be sure, since Edwin Black stated in 1965 that rhetorical critics had entered "an age of critical self-consciousness and specialization," (p. 3) this has evolved, deepened, and diversified through the decades. Now, many rhetoricians have developed methodical vocabularies beyond the dictum that "Criticism is what critics do," (p. 4) incorporating field methods and ethnography (McKinnon et al., 2016; Rai Candice et al., 2018), including radically participatory approaches (Middleton et al., 2015), empirically-grounded audience and reception studies (Kjeldsen, 2017), and more. Still, method in the sense of a somewhat fixed set of tools with which to derive knowledge from data does not have the same centrality as in many other research disciplines.

This dissertation's articles reflect this tendency: Each article rely on central theoretical concepts from in- and outside rhetorical scholarship in their interpretation of scientist activist rhetoric, but none of the articles contain an independent methods section. I see it as a strength of this field to be chiefly occupied with criticism *as such* – broadly: analyzing and judging rhetorical processes that the critic locates, assembles, and finds important. My take on this general approach is what I here call the 'sweltering core' of rhetorical criticism. This core is a fundamental orientation towards rhetorical phenomena that provides room for strategies for analysis and critique that is not self-contained and lacks any attempt at isolation from the broader (academic) environment. This disciplinary

core is this dissertation's guiding perspective. I choose the metaphor of a *sweltering* core not only because it aptly reflects the warming Anthropocene and its increasingly extreme heat events; it also points to the lines of contact and melting of disciplinary borders that comes with engaging in scholarship in fundamentally unsettling times. The word's dictionary meaning of "having a temperature higher than what is comfortable" (*Sweltering*, 2023) speaks to such an orientation towards the critical and urgenct: the 'method' of rhetorical criticism as it is broadly employed in this dissertation means analyzing and judging rhetorical phenomena in the present from a critical tradition already in place – but this tradition is no more traditional than it can be brought to melting contact with any other science or scholarly tradition if need be. And need certainly be! If a main function of rhetorical criticism is "its capacity to intervene in seemingly intractable sociopolitical problems" (Wilson, 2020, p. 282), the climate and ecological emergency surely must set our theory/criticism complex into red hot motion.

In "Publish and/or Perish", an article centering on a textual product (the scientific journal commentary article), I examine the interrelations of stylistics and argument, guided by Jeanne Fahnestock's (2002) seminal work on rhetorical figures in science in order to say something about how two case texts' structures invites different visions for science and its relation to climate politics. I also flesh out the specific moment in the progression of the climate and ecological crisis that invites these journal articles to take up the issues of activism in academia. This approach has its familiarities with traditional close reading analysis (Browne, 2009; Iversen & Villadsen, 2020; Jasinski, 2001a, pp. 91-97; Leff, 1986; Terrill, 2010) in that I attend "in detail to the interplay of ideas, images, and arguments as they unfold within the spatial and temporal economy of the text" (Browne, 2009, p. 63) in order to gain a "deeper understanding of its meanings" (Brummett, 2010, p. 3) and offer critical judgements about the texts in relation to the context in which they appear. In "Bodies On or Off the Gears of the Science Machine?" and "Rebelling Scientists at the Climate Ministry", I take a more conceptually focused approach to critiquing the rhetoric of specific protest events. That is, I in these articles I engage in "a back and forth tacking movement between text and the concept or concepts that are being investigated simultaneously," working within a framework where "[c]onceptually oriented criticism proceeds through the constant interaction of careful reading and rigorous conceptual reflection" (Jasinski, 2001b, p. 256).

However, these two approaches (close reading and conceptual analysis) are not in practice clear-cut in their differences. Reading, close and 'less close', takes place in all. Concepts are utilized for criticism in all. Reflecting on his own much earlier essay, Michael Leff (1994) – the 'grand old man' of rhetorical close reading – argues that "interpretive criticism ... is a never-ending oscillation between distance and engagement, between identifying with the other and maintaining distance from the other" (p. 324). As I hope to make clear in the article "Impure Methodology", engagement at a distance is not only possible but direly needed in the climate and ecological emergency. However, on the level of method, the interpretive reading putting textual elements into situational context, oscillating between theoretical concepts productive in the particular cases, emanates from the sweltering core of rhetorical criticism that can be put into productive play in an environmental humanities context. As a strategy for analysis, it is first and foremost oriented toward a crisis – indeed, it is already inevitably *in* the crisis – that is the catalyst for engaging critically with rhetorical phenomena in the first place. Reaching a boiling point, something is set into motion, often unpredictably and contingently.

To think through the meaning of this sweltering core and exemplify the potential for melting into other traditions and strategies of analysis in the critical present, I draw in the following on Stuart Hall's concept of conjunctural analysis to bring this core into conversation with cultural studies.

2.2 Conjunctural Analysis and its Potentials for Rhetorical Criticism

Joshua Gunn (2020, pp. 8–12) draws attention to the affinities between rhetorical studies and cultural studies in their way of going about critically examining public symbolic interaction and influence. He quotes cultural studies scholar Lawrence Grossberg's observation that "cultural studies is not defined by a particular sort of text … nor can it be defined by a particular set of methods,' … because the object of cultural studies 'is always context'" (1997, p. 246, 2010, p. 25, as quoted in Gunn, 2020, p.11).¹ Gunn thus points to useful similarities in analysis and critique of the contextual in these two disciplinary domains.

So, what context?

The last couple of years, scientist activists have thrown paint on government buildings in Zaragoza (Reuters Pictures, n.d.), chained themselves to the fence of the White House (Fischer, 2022), gatecrashed a private jet conference in Brussels (Extinction Rebellion Belgium, 2023), and marched the streets of Stonetown, Zanzibar (Scientist Rebellion Africa, 2023), among many other protest actions, often connected to the Scientist Rebellion movement. American climate scientist James Hansen, who himself has been arrested for civil disobedience on several occasions (McGowan, 2011), wrote in his 2009 book *Storms of My Grandchildren*: "I believe we must exert maximum effort to use the democratic process. But what if new electees turn out like the old? We cannot give up. That's why I am now studying Gandhi's concepts of civil resistance" (p. 246). It seems that here, in the early 2020's, many other scientists have concluded that the new electees are indeed like the old and that radical approaches such as civil disobedience are merited, perhaps even present an ethical obligation, for the scientific community.

Claiming, as I do throughout this dissertation's articles, that this is a broad and increasingly radical tendency in contemporary scientific culture, how does one go about studying it as a humanities scholar prone to interpretive, conceptually driven textual criticism? I propose that instead of attempting to show how methods like close reading or concept-driven analysis can be 'applied' to the rhetorical phenomena under scrutiny (even though these methods can and often will play a part), critics should take seriously the fundamental critical insight that in studying diverse and complex phenomena like scientist activism on a global scale, the critic must construct their own text from the fragments

¹ Grossberg, incidentally, is featured in the section on "The Postmodern Perspective" in *Methods of Rhetorical Criticism: A Twentieth-Century Perspective*, edited by Bernard Brock, Robert Scott, and James Chesebro (1990). This further underlines the affinities between rhetorical studies and cultural studies in the area of methods and methodology.

available (McGee, 1990) in order to make meaningful critical judgement of societal importance. However, lest one fantasizes about cosplaying as "hermeneutic Indiana Jones" (Gaonkar, 1990, p. 307), heroically (patriarchally?) guiding the reader through the critic's favorite texts (personal interests?), an approach to interpreting, judging, and engaging with rhetorical phenomena that has something to say about *this* moment in time, *this* historical, political, planetary context, is called for. As Dilip Gaonkar (1990) rightly pointed out, overemphasis on the textual construction of the critic themselves faces the danger of amounting to keeping on "reading lips' ever so closely" (p. 314). Being conscious of the climate and ecological crisis forces a decent dose of "rhetorical realism" (Cloud, 2018) on critics that is deeply serious about taking the contextual into account in interpreting and judging rhetoric, as well as the way that any rhetorical critique is itself a rhetorical text (Andersen, 1993; Klumpp & Hollihan, 1989; Mckerrow, 1989).

This dissertation's articles engages in such work. In the following, I offer an explicit example of how this sort of critical engagement grounded in the sweltering core of rhetorical criticism can meaningfully come into contact with other traditions and strategies for analysis to engage in this contextual work. Specifically, I turn to the cultural study approach conjunctural analysis as a fitting example for a dissertation centering in large part on critical conjunctures – between science, politics, and the biosphere – in this moment in time.

As I write in "Impure Methodology", Dana Cloud's (2020) argument that "*critique must happen in conjunction with practical political activity if it is to be relevant at all to the democratic project*" (p. 217) has been a lodestar quote throughout my work with scientist activism for the last three years. Building on the idea of the conjunctural, one could turn to prominent cultural scholar Stuart Hall. Hall adopts the concept of the conjunctural from Italian Marxist Antonio Gramsci's (2005) prison notes (as do Cloud), after having used a similar approach for years (Davison et al., 2017, p. 2). A founding scholar of cultural studies, Hall "tended to be theoretically open, borrowing and bending analytic resources from a variety of places in order to find ways of illuminating … concrete political situations" (Clarke, 2014, p. 114). He employed Gramsci's (1971) sense of the conjunctural in analyzing contemporary history and politics – "the conjuncture is the set of immediate and ephemeral characteristics of the economic situation" (p. 177) – most famously in his account (cowritten with Chas Critcher, Tony Jefferson, John Clarke, and Brian Roberts) of Britain in

the 1970's: *Policing the Crisis: Mugging, the State, and Law and Order* (Hall, 2013). Hall and collaborators analyzed the numerous social, cultural, and political factors and events that would, in the 1980's, lead to the rise of Thatcherist populism. Analyzing the conjunctural means, in this sense, to examine very broadly the situational characteristics at some moment in time, separating the conjunctural from the structurally deeper 'organic' movements of classical Marxism. Importantly, "the work of doing conjunctural analysis [is] political in the sense that it [is] designed to reveal the possibilities and resources for progressive action" as it "highlights the ways in which moments of transformation, break, and the possibility of new 'settlements' come into being" (Clarke, 2014, p. 115). Further, John Clark: "[Conjunctural analysis] is (again) not a Theory, but an orientation—a way of focusing analytic attention on the multiplicity of forces, accumulated antagonisms, and possible lines of emergence from the conjuncture" (Ibid.). According to Hall (2011) himself, referring to Gramsci and French Marxist philosopher Louis Althusser, "conjunctions arise when a number of contradictions at work in different key practices and sites come together—or 'conjoin'—in the same moment and political space" (p. 9).

Turning toward the rhetoric of scientist activists in the climate and ecological emergency, we can easily appreciate the rise in scientists speaking truth not simply to each other but *to power* as born of a conjunction: The epistemic and planetary crises laid out at the onset of the article "Rebelling Scientists at the Climate Ministry"; the global moment in the climate debate where scientists can now be on the front foot instead of defending their evidence as described in the article "Publish and/or Perish"; the interrelations and tensions between machinic logics pointed out in "Bodies On or Off the Gears of the Science Machine?"; and the uncanny present brought on by biospheric destruction as portrayed in "Impure Methodology" that poses activist challenges to the scholar studying these movements. This conjuncture puts specific demands on scientists, and scientists deal with and respond to these demands in a number of ways. The conjuncture, at the same time, puts demands on the critic as well.

According to Jeremy Gilbert (2019) "conjunctural analysis is never a straightforward exercise in periodisation, it is always concerned with the identification of continuities and discontinuities on multiple scales" (p. 14). In conjunctural analysis, the critic is not taking on the mammoth task of "providing a critical account of the social totality" (Highmore, 2020, pp. 36–37). As cultural theorist Ben Highmore (2020) argues, the conjecturality and disjuncturality of the Anthropocene puts highly complex yet urgent demands on critics attempting to make sense of the "messy mix-up of time scales" (Malm, 2016, p. 8) that is human culture and more-than-human ecological relations within our climate political moment.

I will return to the critical conjunctions in my account of this dissertation's transdisciplinarity below. My point here is that the core of rhetorical criticism can methodically melt together with other traditions and perspectives. It is not that rhetorical criticism 'takes in' a couple of elements, concepts, or methods from conjunctural analysis, or vice versa. Rather, I want to point to how rhetorical criticism can move across approaches without resorting to quotidian occupations with what belongs to whom according to the disciplinary cartography – and produce good criticism, better criticism, all the while. Thus, I have not attempted to lay out anything resembling a comprehensive account of conjunctural analysis and its history and application within cultural studies; instead, my aim is to show the particularly sweltering qualities of criticisms within the humanities. In the analysis sections of my dissertation articles, I have used the rhetorical critic's 'toolbox' according to each case while putting text and context into conversation with literature from a range of fields. This is one way in which I hope that this dissertation - daring to put 'conjunctures' in its very title - delivers no dogmatic claims on 'how we should view the world' but attempts to open up further conversations within rhetoric, climate and environmental humanities, and beyond.

Another important term besides conjunction figures in this dissertation's title; the Anthropocene. In the following, I elaborate on my usage of this geological moniker as it relates to my dissertation as a whole.

2.3 Anthropocene Rhetoric

To some, the term Anthropocene – referring to our current geological epoch following the Holocene as one co-shaped by human activity, first popularized by geologists Paul Crutzen and Eugene Stoermer (2013) in 2000 – has become dated and was perhaps never a fitting description of our planetary times. As Andreas Malm and Alf Hornborg (2014) argue in their critique of Anthropocene narratives, "the fossil economy was not created nor is it upheld by humankind in general" (p. 62). We do not suffer equally in the climate crisis, nor

are we equally responsible for its coming about, and pinning climate and environmental destruction on Humanity as such is of course too much of an "easy story. Easy, because it does not challenge the naturalized inequalities, alienation, and violence inscribed in modernity's strategic relations of power and production" (Moore, 2015, p. 170). Thus, whereas discussions about the Anthropocene among geologists tend to circle questions about its exact break-off from the Holocene (Lewis & Maslin, 2015), an extensive body of work within the environmental humanities and social sciences has introduced new '-cenes' such as the Capitalocene (Parenti et al., 2016), the Technocene (Hornborg, 2015) the Wasteocene (Armiero, 2021), the Misanthropocene (Patel, 2013), the Manthropocene (Raworth, 2014), the Chtulucene (Haraway, 2016), and many more. Indeed, as environmental historian and historical geographer Jason Moore (2015) notes, "[n]eologisms come a dime a dozen in Green Thought" (p. 35).

Although not a pervasive trend, some rhetoricians have picked up the term. For instance, Joshua Tray Barnett has discussed rhetoric in the Anthropocene from several angles (Barnett, 2019b, 2019a; Barnett & Gore, 2020). He comments on the ways that using this term invites us to understand ourselves as a 'we' and begin working towards earthly coexistence (2019b, p. 296). The very act of naming our times is thus in itself a rhetorically significant choice, guiding our climate and environmental sensibilities. Jennifer Clary-Lemon (2019, p. 6) similarly points to the Anthropocene as both epochal invention and an argument about our positionality and responsibility within Earth's ecologies, while Nicolas Paliewicz (2023) employs the Anthropocene as an epoch where "absences (species, ecologies, mountains) have become more literal" (p. 235) in his argument for a reorientation of extractivist corporate rhetoric such as that of copper mining companies who quite literally move mountains, leaving a hole in the planet that we are forced to relate to on political and existential levels. That said, rhetorical conceptions of the Anthropocene still seem to lack behind discussions of geological conditions influencing many other humanities disciplines – likely a consequence of the general, though gradually improving, marginalization of environmental and climate rhetoric in the broader field of rhetorical scholarship (Söderberg, 2020; Pezzullo, 2016).

As I have argued elsewhere (Appel Olsen, 2023), these epochal neologisms are not useful to scholars and critics because we need to 'choose' one of them and discard the others. Rather, their value lies in bringing critical attention to different angles of the larger planetary crisis. Every '-cene', in this perspective, resides in the broad category of the Anthropocene and the employment of each is a matter of bringing attention to capitalism (Parenti et al., 2016), waste streams (Armiero, 2021), the irony of trying to fix the system with its own broken logics (Appel Olsen 2023), or some other aspect. In this dissertation, I use the term Anthropocene not because I think it is better than other 'cenes' but because of its ability to encompass more. As Donna Haraway (2016) has noted, "we will continue to need the term Anthropocene" (p. 51) although reinventions are called for at the same time; or in the words of Cara Daggett (2019), "the term Anthropocene has proven to be rather sticky" (p. 10). Similarly, I retain the moniker of the Anthropocene first and foremost to speak to a multitude of conversations and a multitude of scholarly and scientific fields, all the while doing so grounded in my rhetorical background. In other words, rather than taking side in the "epoch wars" (Kronemyer, 2021), this dissertation moves with conscious unrest across disciplinary boundaries and theoretical inclinations in order to participate in and engage critical dialogues on our (yes: *whose*?) times. This, to me, is the central invitational potential for the Anthropocene as put into conversation with rhetoric: It lends political urgency and disciplinary outreach to our critical endeavors.

2.4 Critical Conjunctions and Disciplinary Boundaries in the Anthropocene

In my remarks above on drawing inspiration from conjunctural analysis, I sowed the seeds for a deeper discussing on how to move across disciplinary borders. Here, I will comment on the transdisciplinarity of the dissertation as a way to summarize the section's points about rhetorical criticism, conjunctions, and the Anthropocene and in order to invite conversations across disciplinary fields and institutional realms. I here largely follow Thomas Jahn, Matthias Bergmann, and Florian Keil's (2012) comprehensive definition of transdisciplinarity:

Transdisciplinarity is a critical and self-reflexive research approach that relates societal with scientific problems; it produces new knowledge by integrating different scientific and extra-scientific insights; its aim is to contribute to both societal and scientific progress; integration is the cognitive operation of establishing a novel, hitherto non-existent connection between the distinct epistemic, socialorganizational, and communicative entities that make up the given problem context. (pp. 8–9)

I have already referred to Hubbell and Ryan's (2021) call for transdisciplinarity in the environmental humanities taking its vantage point from core disciplines. Coupling this call with Jahn, Bergmann, and Keil's multi-layered conception of transdiciplinarity, I approach studying scientist activist rhetoric from the 'sweltering core' of rhetorical criticism, which can work in and with numerous traditions and methodological approaches when dealing with not only problems of great complexity but also problems of great urgency.

Thus, I agree with Hubbell and Ryan that engaging with a wider field from a disciplinary core is meaningful, but the sweltering quality of this critical core leads me to regard a movement across the humanities alone as needlessly limiting. As David Zarefsky (2008) notes, there are "productive intersections" between social sciences and rhetorical criticism (p. 637), but I would add that the productive intersections span even wider, especially in the Anthropocene. Thus, this dissertation engages a range of climate scientific literature, as contextualization, as cases for analysis, for theory-building, and more. I draw on philosophy and cultural studies (e.g. Connolly, 2019; Massumi, 2017; Morton, 2010; Shotwell, 2016), social and political science (e.g. Bashir et al., 2013; Brulle & Werthman, 2021; Epstein, 1996; Green, 2020; Mills, 1958), climate and ecological sciences (J. E. Hansen et al., 2022; Lewis & Maslin, 2015; Zachariah et al., 2023), and more. Adding to this, as I describe in detail in the "Impure Methodology" article, I have been involved with scientist activists during the PhD research, which has affected the dissertation productively - not only adding to my knowledge of these movement but also fostered a epistemically and critically productive link between activism and research, at one point resulting in a publication co-authored with life science activists (Racimo et al., 2022). Further, I have engaged in public debates about the dissertation's subject matter (Appel Olsen, 2022) as well as about 'activist research' at Danish Universities (Appel Olsen, 2021a, 2021b). I regard these activities as groundwork for the "extra-scientific insights" contributing to creating a "connection between the distinct epistemic, social-organizational, and communicative entities that make up the given problem context" in the above definition of transdisciplinarity (Jahn et al., 2012, pp. 8–9).

Although this dissertation is not exclusively situated within the rhetoric of science field, I think that Leah Ceccarelli's (2013b) question "To Whom Do We Speak?", with which she examines the audience relations of rhetorical scholarship dealing with scientific rhetoric, is an important one for a dissertation in the Anthropocene conjuncture of science, politics, and the deteriorating biosphere. It is an aim of this dissertation that its insights can illuminate rhetorical scholarship dealing with science, activism, and the Anthropocene, yes, but it is equally important to me that the insights and critique contained here can come to the benefit of parts of the scientific community wishing to engage in activist practices in meaningful ways. In Ceccarelli's words, to "accomplish the shift from understanding to action" (p. 2). The work of this dissertation, then, "engages with our colleagues in science to help manage uncertainty and the threat of ecocide," as advocated by Carl Herndl and Lauren Cutlip (2013, p. 7) in accomplishing the understanding to action shift described above, although, importantly, not solely from within university institutions. Working with the scientist activists based in Denmark means moving outside of university grounds in the same way that I describe in "Rebelling Scientists at the Climate Ministry". Reflecting on the science/politics split and/or enmeshment in the thinking of Max Weber, Wendy Brown (2023) has recently argued that "thinking conjuncturally—across dissimilar elements and seemingly heterogenous formations" (p. 93) with Hall is a vital strategy for analysis for our times, exactly because we face crises cutting across modes of inquiry and being, not least when considering relations between science and politics. This dissertation aids such thinking while calling for more rhetorical-critical engagement with the conjunctural in future research and/or activism. Thus, in line with my argument for an "impure methodology" in this dissertation, I aim for this dissertation to be "considered as an invitation to further reflection about social issues" since by "resisting univocality and essentialism, critics open up their work to engagement by a wide range of audiences" (Warnick, 2004, p. 70).

This is in line with my critical stance against hyper-specificity and –locality in this dissertation, both in terms of delineations of science and activism, and delineations of rhetorical scholarship and the social drama in which it takes place. I argue that focusing on specific sites for criticism that some rhetoricians dealing with Anthropocene issues

advocate (Purfield, 2022) is unhelpful for the same reasons that establishing a rigid separation of science and politics, knowledge and activism, is unhelpful: Change, progress, and becoming happens in moving-between (Massumi, 2017; Massumi, 2021), more than in "bridging" gaps (Purfield, 2022). I thus posit a stance that moves across and between in a way that, for instance, the many new materialisms budding up within rhetorical scholarship (Gries, 2020; Clary-Lemon, 2019; Pilsch, 2017; Purfield, 2022; Rivers, 2015) have trouble accounting for in their foregrounding of ontological entanglements. To be clear, I do not consider these theorizations of rhetoric to be without value; in fact, they are in many cases brilliant at highlighting the exact impurities that I point to in the article "Impure Methodology" (see for example Barnett, 2017). However, I find that the tendency to start from the localized, the specific, in an ontological quest for the enmeshed and entangled and the agency of the non-human risks missing some crucial targets when dealing with phenomena like scientist activism and attempting to inform and improve the efforts of such movements. Referring back to the above section on Anthropocene rhetoric, I think that it is all (d)well and good to learn to "dwell" in the Anthropocene, or even to "dwell on dwelling" (Barnett & Gore, 2020, p. 20), but this seems incongruent with the urgency and unrest of the crisis facing us. (This is especially dealt with in the "Rebelling Scientists at the Climate Ministry" article, but also in "Impure Methodology".)

A rival term to this dissertation's critical *conjunctions* might be an ecocentric rhetoric of *coexistence*, most prominently carried forth by Barnett (2021). This is more a matter of critical emphasis than of incompatibility of paradigms, but I do think it is important to press the importance of such critical emphasis. Whereas an "ecocentric rhetoric will be animated and suffused by the conviction that earthly coexistence is our most pressing task, a task for which human and more-than-human actors alike are responsible" (p. 367), critiquing rhetoric in the Anthropocene with an orientation towards conjunctions is less concerned with coexistence, and even less concerned with the responsibility of humanity as such (and in no way with the responsibility with the more-than-human); it is concerned with how rhetorical struggles over political action and inaction cuts across sectors and cultural norms in impure and unrestful ways. The target of criticism is in this perspective a political struggle against the powerful interests perpetuating the destructive fossil economy first and foremost, and not so much the skewed human-non-human relationships. Coexistence is a good thing to strive toward, but

the draw-back could be that while we stake out ways to coexist and dwell in ecological ways in our disciplinary communities, fossil capital hammers on, eroding the conditions for meaningful coexistence in the first place. From this perspective, we need to examine and engage conjunctions between separate spheres of scholarly and political action at least as much as we need to coexist with all actors/'actants' in the warming and destabilizing biosphere.

Before moving on to the third main section of this introductory chapter, some final remarks on a central concept in the dissertation are in order.

2.5 Activism

In this dissertation's articles, I do not define what I mean by the term activism. The main reason for this is that the scientist rhetoric that I examine is, on any definition, activist: Demonstrations, civil disobedience, blockages; we easily recognize these as activist undertakings, and this dissertation is more interested in the negotiations of scientific ethos and identity in connection to these undertakings than in discussions about the boundaries and definitions of activism as such. In "Impure Methodology", I do grapple with the question of whether *I* am an activist and to what extent. Again, however, my interest is not first and foremost in defining activism as a concept but to investigate the impure relations surrounding science, activism, and academia in practice. That is not to say that such definatory work is not of interest to scientist activist rhetoric but, simply, that it is not the focus of this dissertation. However, a few words are merited on this topic since the reader will be encountering this term many times in the course of this dissertation. Additionally, further research into the links of science and activism might would merit a discussion of this topic. In the following, I suggest a starting point for such investigations.

As I shall return to in section 3, the countercultural turn in the 1960's and 1970's USA influenced rhetorical scholarship of the time, and 'unruly' and 'confrontational' expressions became legitimate objects of analysis and critique. An influential book in this tradition is John Bower and Donovan Ochs' *The Rhetoric of Agitation and Control* from 1971. Although using the term agitation and not activism, I suggest that their definition is a meaningful starting point: "Agitation exists when (1) people outside the normal decision-making establishment (2) advocate significant social change and (3) encounter a degree of

resistance within the establishment such as to require more than the normal discursive means of persuasion" (p. 4). To investigate such rhetoric, they point out, it is imperative to examine the "extra-discursive means of persuasion" (p. 5) of agitators, a productive qualification given the focus on the orator and the speech in the discipline at the time. Bowers and Ochs' definition has the advantage of pointing to positions of power as an important aspect of agitation/activism. We do not usually refer to elected politicians as activists, since they are at the center of decision-making and often comprise the establishment pushing back on the demands of activists.

Thus, activism always has something to do with social positions. As Lee Artz (2019) cynically observe in his reflective essay on activism and rhetoric:

Simply: shareholders seek profits, publicists promote clients, soldiers obey, professors stick to the text. Each choice is constrained by the social order and the individual social position, including what has been integrated into individual ideologies: soldiers do their duty; *professors don't shout* [emphasis added] ... (p. 163)

However, scientists may not be at the center of the decision-making establishment, but they are not completely alienated from it either. For instance, governments do seek advice from scientific experts, and the central position of the scientists involved with the United Nations' Intergovernmental Panel on Climate Change do hold some sway in climate politics. An impetus of this dissertation is exploring this 'inbetweenness' of scientist activism as scientists are working in official institutions but take up "more than the normal discursive means of persuasion" in their activist agitation and disruption to *challenge* official institutions such as governments and corporations.

In his work, DeLuca (1999) welcomes the turn towards 'confrontational' rhetorical forms, such as activist rhetoric. However, he consciously diverts attention from the constitutive aspect of movement rhetoric for the people participating in movement work and activism (for an early account of social movement rhetoric as constitutive in this sense, see Gregg, 1971) and highlights the sense in which activists can disrupt identity categories of the dominant culture. That is, he suggests that we should work "from an understanding of rhetoric as the mobilization of signs for the articulation of identities, ideologies, consciousnesses, communities, publics, and cultures," to explore "how radical

environmental groups are using image events to attempt both to deconstruct and articulate identities, ideologies, consciousnesses, communities, publics, and cultures in our modern industrial civilization" (p. 17). This, I think, is a central function of activist rhetoric that speaks from a position outside the establishment to advocate significant social change. And as I argue throughout this dissertation, this is what scientist activists in the climate and ecological crisis are engaging in – inevitably destabilizing notions of not just society but of science itself in the process. Thus, apart from the obvious sense in which movements like Scientist Rebellion are activists, this challenge to hegemony and dominant cultural frames is a central component of activist work in the Anthropocene. Future scholarship investigating the outer borders of what meaningfully constitutes scientist activism (debate participation? newspaper columns? anti-establishment book publishing?) could productively start from this perspective. This means grappling with this question: At what point does scientists' advocacy shift over from being an institutionally backed and more or less culturally accepted rhetorical form to becoming so radical that it starts challenging the status quo, and thereby science's own position therein?

Having elaborated on some core concepts of this dissertation – Anthropocene, conjunctions, and activism – in the following I reserve a section for perhaps the most central and complex concept of the dissertation: *ethos*.

3. Rhetorical Ethos in Scientist Activism

At the time of writing, scientists warn that Earth's climate systems are headed towards unprecedentedly extreme weather events, especially as 2023's El Niño event is heating up ocean streams adding its perilous influence to the highest temperatures on record in the Arctic regions (Watts et al., 2023). Professor Peter Stott at the UK Met Office's climate monitoring and attribution team said to The Guardian: "If a few decades ago, some people might have thought climate change was a relatively slow-moving phenomenon, we are now witnessing our climate changing at a terrifying rate" (Ibid.). A recent study in *Nature Sustainability* urges "humanity to be vigilant for signs that ecosystems are degrading even more rapidly than previously thought," since "conventional modelling approaches based on incremental changes in a single stress may provide poor estimates of the impact of climate and human activities on ecosystems" (Willcock et al., 2023, p. 1). This study's title is itself disquieting: "Earlier collapse of Anthropocene ecosystems driven by multiple faster and noisier drivers" (Ibid.). Fast, noisy collapse; surely, widespread ideas about incremental development, let alone incremental *progress*, are challenged by such planetary ruptures.

Why start a section on rhetorical ethos with these alarming developments? In rhetorical scholarship, the concept of ethos is used in a variety of senses – as the audience's impression of the character of the speaker as created through the speech (Aristotle et al., 2009), as a central part of the overall rhetorical project of identification (Burke, 1950), as the continued construction and challenge of authority (Farrell, 1993), as a dwelling place for moral characteristics and an abode for crafting human values (Hyde, 2004), and many more – but rarely in connection to dramatic and sudden changes in the biosphere. The latter, however, is an indispensable contextualization for rhetorical studies of scientific ethos in the climate and ecological emergency. This is a central premise for this dissertation.

In "Rebelling Scientists at the Climate Ministry" I put forth an argument for a placebased understanding of ethos receiving its critical grounding from Brian Massumi's (2017) "principle of unrest". The content and argument of this article is elaborated in the summary of articles at the end of this introductory chapter, but I think more is to be said about this than the space in that article (published in the journal *Rhetorica Scandinavica* and thus loyal to their limits) allowed for. In this section, I supply some additional theoretical meat to its bones. I will do so by way of a case that may, at first, seem surprising: a speech by American physicist J. Robert Oppenheimer. However, I think that this explanatory case serves as a good heuristic vantage point for discussing widespread and useful ideas of rhetorical scientific ethos as well as how these ideas can be nuanced and expanded with a place-based understanding of rhetorical ethos that takes movement and unrest into account, especially in the climate and ecological emergency.

3.1 Unrestful Ethos: Oppenheimer's Farewell Speech as Explanatory Case

As I am finishing this PhD dissertation, Christopher Nolan's *Oppenheimer* (2023) has been drawing moviegoers to theaters worldwide in July and August. The film's portrait of physicist J. Robert Oppenheimer (Cillian Murphy) shows the 'father of the atomic bomb' as a deeply sensitive man, at least in terms of his incessant drive towards expanding the

frontier of scientific discovery – a metaphor central to the development of US scientific culture (Ceccarelli, 2013) – in the New Mexican desert in the early to mid-1940's. The film, based on Kai Bird and Martin Sherwin's biography *American Prometheus* from 2006, also deal in detail with the politics in and around science during and after World War 2 – especially the McCarthyist hearings that ended up humiliating Oppenheimer by stripping him of his security clearance one day before its expiration.

As it happens, Oppenheimer is also a central character in one of the most thorough rhetorical accounts of ethos in modern science: Lynda Walsh's (now Lynda Olman) Scientists as Prophets: A Rhetorical Genealogy (2013). Walsh shows how a "prophetic ethos" is bestowed upon scientists by publics in order for them to reach some degree of certainty about pressing issues in times of crisis; a certainty that seems to be denied to the polity by conventional democratic discourse. In her definition of ethos, Walsh draws on Michael J. Hyde's (2004) notion of ethos as an "abode" or "dwelling place" and takes it to mean "a coherent set of expectations about how a person should perform a familiar political role" (Walsh, 2013, p. 4). Scientific ethos, then, is the rhetorical shaping of the political role of scientists into familiar structures of social life. In her chapter on Oppenheimer, Walsh shows how the bomb father "developed a split prophetic personality: the cultic war adviser and the kairotic pacifist crying out in the wilderness" (p. 106). This is at the heart of Walsh's genealogy of the prophetic ethos of the scientist adviser: The public rhetoric of scientists is picked up and utilized to bolster values already in place in a given political culture. Oppenheimer the movie depicts this split prophetic personality in operation extensively, for instance in how 'Oppie' and his scientific breakthroughs are caught up and exploited in the US war effort. However, as soon as scientific rhetoric grinds up against covenant values, the praise quickly turns to blame and a hard demarcation between science and politics is erected by authorities to ward off the 'false' prophet. Cillian Murphy as Oppenheimer shows us the depressive state that a scientist is easily thrown into when confronted with the sudden destabilization of prophetic ethos.

In *The Anthropocene Unconscious: Climate Catastrophe Culture* (2021), Mark Bould argues that even contemporary cultural texts that do not directly address climate change can be productively read as commenting on the Anthropocene. A catastrophe film if there ever was one, *Oppenheimer* is a portrait of institutionalized science's implication in planetary destruction that is easily interpreted in a climate and ecological emergency

context. This dissertation draws these connections about destruction and science in the 20th and 21st centuries. In the article "Bodies On or Off the Gears of the Science Machine?", I draw on C. Wright Mills' (1958) critique of scientists defaulting to authoritarian destruction in the nuclear arms race, and, as I argue, similar ethos work has to be engaged with in the climate and ecological crisis.

Oppenheimer - the movie and the rhetor - thus offers a ripe opportunity for discussion of scientific ethos and planetary destruction. However, neither Nolan's fictionalization nor Walsh's study touch upon one of Oppenheimer's most famous speeches that directly concerns scientific ethos: his farewell speech to the association of Los Alamos Scientists on November 2nd 1945. This speech is probably most famous for its ending containing the words "we are not only scientists; we are men, too" (Oppenheimer's Farewell Speech, n.d.). Other parts of this speech, however, are of interest in the context of scientific ethos. Oppenheimer starts out by addressing the audience "as a fellow scientist, and at least as a fellow worrier about the fix we are in". This "fix" is a new global reality where scientists have come to be at the center of creating weaponry so powerful that civilization might be destroyed. According to Oppenheimer, this situation has "forced us to re-consider the relations between science and common sense" and brought about a new era where "the very existence of science is threatened" - following naturally from the bleak premise that "the life of science is threatened, the life of the world is threatened" (Ibid.). How are scientists positioned in terms of this grave situation according to Oppenheimer? His answer to this might seem surprising to many:

As scientists I think we have perhaps a little greater ability to accept change, and accept radical change, because of our experiences in the pursuit of science. And that may help us ... to be of some use in understanding these problems. (Ibid.)

One could have made the opposite argument: A reader of Thomas Kuhn (1970) might point out that scientists would rather not abandon current paradigms and only do so when the abnormalities have piled up in such a fashion that there is no longer a way around shifting to a new interpretation of reality. Oppenheimer's idea of a more politically dynamic scientist personality seems to offer a different story: Because of their profession, scientists are politically flexible to a higher degree compared to most other citizens. We

might not grant Oppenheimer descriptive accuracy here since there are plenty of examples of not only conservative and reactionary scientists, but of conservative and reactionary streaks in scientific *culture* as such. Oppenheimer's team of nuclear physicists is itself an example of this latter point. But perhaps Oppenheimer was onto something in another sense.

In "Rebelling Scientists at the Climate Ministry", I argue that Hyde's (2004) influential work on rhetorical ethos as a dwelling place or abode, following Martin Heidegger's reading of Aristotle, is right to point to the sense in which ethos is not simply an appeal to character in persuasive speech but is also the perpetual act of co-constructing the places where moral deliberation unfolds. However, I argue that Hyde's focus on dwelling is inadequate in many respects, not least in the climate and ecological emergency, which is characterized by an unraveling of places and the disturbances of the Earth's abodes more than by the civilizational serenity at which Hyde's Heideggerian conceptualization hints. I propose instead a place-based conception of ethos in the Anthropocene as unrestful. What I mean by this is that scientists' proximity to large-scale catastrophe – in terms of their role in crafting the technologies of modernity as well as providing detailed knowledge of its impending demise - affords especially intense opportunities for political intervention and interruption for scientists to engage in radical climate protests and movement work as scientists. In "Rebelling Scientists at the Climate Ministry", I show how scientists create a surprising amount of debate and offer novel perspectives on scientist activism and scientific social responsibility in the Nordic countries by moving between places, from classroom to the doorstep of power. In "Bodies On or Off the Gears of the Science Machine?", I show how scientist activists' bodily rhetoric intervenes in a cacophony of machinic logics at the Science Museum in order to pose questions about the ties between cultural institutions and Big Oil. To return to Oppenheimer, we can see the importance of movement and placer here. Of course, he did not take to the streets, but his movement from the laboratory to the New Mexican dessert - literally changed the world. What, I wonder, could then be gained by the scientific community on climate and ecological issues by consciously moving their scientist bodies between strategically chosen sites of knowledge and resistance?

This conception of unrestful rhetorical ethos is highly relevant to scientific rhetorical practice, to scientific ethos, as the examples above on the fast and noisy collapse

of the Anthropocene indicate (Watts et al., 2023; Willcock et al., 2023). We see Professor Stott noting the terrifying rate of climate change not imagined only decades ago. We see Willcock et al. observing this non-gradual, abrupt biospheric shift and calling for "vigilance" and, importantly, challenging current practices of their field (incremental modelling based on incremental changes) on account of it. With planetary ruptures comes not only political but also scientific ruptures. These ruptures invite the very rhetorical renegotiation of scientific ethos that scientist activists engage in when confronting and engaging the wider public. The activists in this dissertation's case material do exactly this by moving themselves *as scientists* from one place to another, inevitably generating urgently needed debate about the role and responsibilities of scientists in the process. Thus, scientific ethos is on the move, fast and noisy, in scientist activism. Recognizing unrest, place, and movement as central to (re)construction(s) of scientific ethos helps us to not only study and understand phenomena such as scientist social movements but also to estimate how well they tap into these unrestful conditions of the evolving Anthropocene in order to improve activist efforts for climate mitigation.

While accounts departing from the rhetoric of science field does important work to nuance and challenge more rigid programs for scientific ethos, such as those based on Robert Merton's (1973) famous "CUDOS" norms, an orientation towards movement, place, and unrest serves as an important widening of scientific ethos within a rhetorical framework; we should not only look at how scientific norms are employed to argue for a certain view of the world but also how these norms can move across the changing terrain as scientists engage in radical action in an emergency. This is where the idea of "ethos as dwelling place" comes up short.

My stab at the dwelling place or abode interpretation of Aristotelian ethos resonates with long-standing debates within the field of rhetorical studies about Heideggerian influences and their value. Needless to say, Hyde (2004) takes Martin Heidegger (alongside another philosopher, Calvin O. Schrag) as his point of departure in redefining (or, perhaps, re-traditionalizing) rhetorical ethos. However, before Hyde's introductory essay to the influential 2004 anthology on *The* Ethos *of Rhetoric*, Philip Wander's (1983) turn towards ideological criticism grounded in historical materialism, although not honing in on ethos specifically, asked questions about previous rhetorical scholars use of Heidegger's philosophy. This sparked a backlash towards Wander. Sharon Crowley (1992) has called this discussion about essentialist/traditional criticism vs. ideological/materialist criticism "an argument that won't go away". She sides with Wander in being skeptical of the Heideggarian influences that are evident in the widespread push-back to Wander's ideologically informed criticism as seen from Allan Megill (1983), Forbes Hills (1983) and others (Warnick, 2004, p. 66).

I think this critique of Heideggarian canonization is extendable to accounts of rhetorical ethos such as Hyde's. Like Crowley, my purpose is not to engage in "Heideggerbashing" (1992, p. 462), or to side with environmental thinkers who regard "Heidegger's environmentalism [as] a sad, fascist, stunted bonsai version, forced to grow in a tiny iron flowerpot by a cottage in the German Black Forest" (Morton, 2010, p. 27). My purpose is to problematize ideas and assumptions about rhetorical ethos as stable, gradual, and "dwelling" that the veneration of Heideggarian thought in rhetorical studies and the environmental humanities broadly has been a part of upholding. As I argue in "Rebelling Scientists at the Climate Ministry", this veneration does not settle well with the unrestful transformations set into motion in the biospheric breakage of the Anthropocene. This maps onto section 2.4 of this introductory chapter where I argue that learning to dwell in the Anthropocene as advocated by Barnett (2019b, 2021; Barnett & Gore, 2020), Paliewicz (2023) and others proves insufficient in some respects. I do not mean to dwell too long on this point of critique. Nevertheless, consider this passage from Barnett and Gore's (2020) suggestion that we learn to "dwell in the Anthropocene": "Dwelling, as we conceive it, consists of inhabitation, respect, care, preservation, safeguarding, letting the earth be what it is as earth, and of recognizing the wildness, the recalcitrance, and the wisdom of what precedes and exceeds the human" (pp. 25-26). The authors write with great poetical schwung about living near the great Lake Superior, how the water itself is mysterious and enchanting, how the highway trailing the edge of the lake "makes it possible that we might appreciate, care for, and even take care of this vast body of water" (p. 29). Thus the enchanting encounter with the lake invites a sort of Heideggerian nature existentialism for these scholars to think with, leading them to conclude: "Thinking is the labor and the gift that replenishes us as we learn and strive, again and again without end, to dwell peacefully on earth in the Anthropocene" (p. 43).

I do not deny the value of humbling experiences with the more-than-human. Still, I cannot help but think that there are bigger fish to fry in the Anthropocene (even in the great Lake Superior). Or, perhaps, that those frying the lake's fish by way of their profitgenerating greenhouse gas emissions heating up any body of water, and their profitgenerating toxic waste streams increasing the acidification of oceans and lakes, care very little about reflections on peaceful dwelling. To return to the question of scientific ethos: How do climate and environmental scientists most meaningfully counter global warming and destruction of the biosphere – by dwelling in an identity as inextricably linked to experiencing deeper connections with more-than-human life or by engaging with their relation to the powers that be in the Anthropocene's fossil economy? The growing social movement activity of scientists attests to the latter, and, in my view, for good reasons: The Anthropocene is cause for alarm more than enchantment, for urgency and unrest more than dwelling. By moving unrestfully and along the frontlines through this changing and breaking landscape of our times, scientists are bound to start negotiating their ethos, finding themselves in new places and positions.²

Oppenheimer's initially puzzling point about scientists being better at adjusting to change – that versatility and flexibility are somehow inherent qualities of scientific ethos – may not hold up in a qualitative survey of the psychological dispositions of individual scientists. However, read instead as a point about the *potential* for scientists to engage in transformative practices, it lends itself to alternative interpretation from which to think deeply about the relations of science and society on a planet in crisis. At the forefront of planetary destruction – whether by mass-destructive weaponry or mass-destructive fossil fuel extraction and emission – scientists cannot escape the upheavals that follow. We can regard this fact as central to scientific ethos, and it urges us to reconsider the rhetorical position of and possibilities for scientists. The scientist activist rhetoric under scrutiny in this dissertation grapples with these positionalities and possibilities in various ways.

Focusing rather on unrest than dwelling in rhetorical conceptualizations, however, does not force critics to abandon ethos as connected to *place*. On the contrary, matters of

² As I argue elsewhere (Appel Olsen, 2023a), unruly argument, such as polemical rhetoric, *within* specialized communities residing in the technical sphere can also be productive in pushing for disciplinary change.

locality, and especially movement across places – indeed, the expansion of our sense of space in a crisis – is at the heart of unrestful scientific ethos in the conjunctures of the Anthropocene. In the following, I take a stab at the relation between movement and place in working with rhetorical ethos of science as it unfolds in this dissertation.

3.2 Movement(s) and Places

Studying scientist activism in relation to an unrestful place-based conception of ethos entails an analytical examination and theoretical appreciation of movement; both in the sense of the social movements formed by scientists and in the sense of the movement from one place to another and this displacement's potential for questioning our ideas about science and society. I have drawn inspiration from Brian Massumi's (2011, 2017) so-called "principle of unrest" – specifically in "Rebelling Scientists at the Climate Ministry" – in my view of scientific ethos and movement: "Displacement is not just a shift of place. It's the index of a becoming: movement not just from one spatial location to another, but from one nature-changing entanglement to another" (2017, p. 8). More so than a direct application of Massumi's philosophy (which, in any case, might not be possible), I use this line of thinking as a guiding inspiration. Acknowledging, with Edwin Black (1965), that "rhetorical transactions are not things; they are processes," (p. 135) we should dive into the movement(s) of such processes on a deep critical level in the fast and noisy Anthropocene, not least when it comes to scientific ethos. This dissertation's articles attempt to engage in such deep diving productively. Such work has not been prominent in the rhetoric of science field, and I hope for this dissertation's work to generate conversations within rhetoric of science, social movement rhetoric, and other areas of study and criticism (and all their transdisciplinary hybrids).

In the middle of the 20th century, rhetoricians began seriously entertaining the idea that perhaps various forms of strategic disruptions of the public order and protest activities could be a justifiable mode of democratic engagement, or at least worthy of critical attention (Burgess, 1968; Gregg, 1971; Griffin, 1952; Haiman, 1967; Scott & Smith, 1969; Simons, 1970; Windt, 1972). Since then, social movement rhetoric has grown to be a considerable subfield of rhetorical studies (Foust & Alvarado, 2018; Foust et al., 2017; Cox & Foust, 2009). In more recent time, rhetoricians have started to understand social movements more as processual societal phenomena than as fully-formed entities rallying around a clearly-defined public issue or identity (Appel Olsen, in press, p. 171; Foust & Alvarado, 2018). Thus, avenues for investigating the relations of movements, places, and bodies of social movements are expanding.

Much useful social scientific work has been done in recent years to understand civil disobedience movements, especially in the climate struggle. Such work looks at these movements' potential for transformational change through prefigurative politics (Berglund, 2023), the dispositions of the youth often at the forefront of disruptive movements (O'Brien et al., 2018), the various organizational and ideological tensions unfolding inside these movements (Berglund & Schmidt, 2020), and more. Taking my vantage point from the sweltering core of rhetorical criticism, this dissertation draws on some of this work but is ultimately concerned with putting publicly available rhetorical texts of the scientist activist movements under critical examination in order "to capture both the material and symbolic effects of discourse - especially in cases where they occur simultaneously" (Pason, 2017, p. 108). The rhetoric of social movements can be fruitful sites for studying ethos negotiation and transformation because "communication is not simply the medium through which power (for and/or against) is expressed but is also how social relationships are constituted and coordinated" (Foust et al., 2017, p. 17).

As I argue in "Rebelling Scientists at the Climate Ministry" a rhetorical-humanistic conception of protest and progress can be a helpful addition to movements otherwise predicated on a distinctive theory of change. That is, a rhetorical conception of disruptive actions directed at a specific audience at a specific time resists the urge to offer "prescriptions, or reduce movements and counterpublics to formulaic definitions or simplistic causal models" (Foust et al., 2017, p. 20) that some movement scholars tend to offer (Chenoweth & Stephan, 2011; C. Farrell et al., 2019; Hallam, 2019). Political reality often proves much more contingent than such models assume, probing us to supplement them with a humanistic, context-sensitive attention to specific situations; to the conjunctions and disjunctions in which the protest rhetoric unfolds. As sociologists Oscar Berglund and Daniel Schmidt (2020, pp. 79–95) argue, dogmatic theories of change such as those at the heart of Extinction Rebellion's tactics are not only debatable in terms of their empirical foundation, they also do not engage productively with relations of power on the climate change issue. Movements are exactly characterized by instability and the shifting of roles

and expectations across place and time. A critical rhetorical investigation of scientist ethos in the climate and ecological emergency, then, is not as much concerned with pointing to a special sort of movement rallying around the social identity of the individuals comprising it (Kriesi et al., 1995; Laraña et al., 1994) but with constructions and disruptions concerning the characteristics of science and scientists as construed in rhetorical processes in specific situations and in relation to specific conjunctions.

When Oppenheimer and his team of researchers moved out into the Los Alamos desert and built a small intermediary town while working on and ultimately testing atomic weaponry, the conditions for science and nature were irrevocably altered. This movement from one place to another by science, however – although creating great unrest – was ultimately facilitated by and in line with political authority of the time. This is the sense in which it is distinguishable from the scientist activist rhetoric that this dissertation studies: They move their bodies, their labs, their knowledge out into confrontation with power, not out towards the new frontiers that power so destructively seeks (Ceccarelli, 2013). However, in terms of the foundational connection between ethos, place, and movement, the rhetorical-political processes are similar: science is fundamentally alterable and these alterations can happen swiftly and are subject to complex rhetorical negotiation of the role of science in society.

3.3 Emergency/Crisis Ethos

In the essay *Times of Crisis*, French philosopher Michel Serres (2014) notes how the origins of the word crisis comes "from the Greek $\kappa \rho i \nu \omega$ (krino), which actually means to judge" (p. x). Thus, he explains, a *critic* must in the end make a judgement on the merits of a phenomena under scrutiny, just like "the film critic decides the film is trashy or brilliant" (Ibid.). Crisis is the point at which we cannot go back or stay put: a decision between alternatives is called for. The crisis, then, at the root of rhetorical criticism and critical rhetoric points us to an important aspect of scholarship working with climate and ecological issues today: The time has passed for relativist games of floating signifiers and deflation of historical illusions about postmodernity's trajectories. Instead, "[p]ostmodernity seems to be visited by its antithesis: a condition of time and nature conquering ever more space. Call it *the warming condition* " (Malm, 2018, p. 11). Facing this warming condition means facing a storm calling us to make ethical judgements here and now. It calls for criticism proper.

The reader might have already noticed my tendency to use the words *crisis* and *emergency* more or less interchangeably when describing the situation brought on by global warming. I do so deliberately and the reader will find this to be the case throughout all four dissertation articles. The Anthropocene's warming condition presents us with both the fact that we cannot go back to some pre-global warming state (crisis) and the fact that we need to act with unprecedented urgency to minimize planetary destruction (emergency). Thus, I move back and forth between the two terms, not because they are synonyms but because they are diagnostically symbiotic. We should use both to describe the here and now because they both do in equally important ways.

Voices from the scientific community reflect this twin relationship of crisis and emergency. Campaigns for governments to declare a climate emergency got off the ground in 2016 (Climate Emergency Declaration Mobilisation, n.d.) with the goal of getting "governments to declare a climate emergency and mobilise society-wide resources at sufficient scale and speed to protect civilisation, the economy, people, species, and ecosystems" (Ibid.). One of Extinction Rebellion UK's major achievements has been pushing the UK parliament to officially declare a climate emergency, and governments and other official institutions around the world have since done the same: According to the official site of the international Climate Emergency Declaration movement, "2,339 jurisdictions in 40 countries have declared a climate emergency" as of the time of writing (Climate Emergency Declarations in 2,339 Jurisdictions and Local Governments Cover 1 Billion Citizens, 2023). Unsurprisingly, scientists across the world have chimed in: Whereas 1,700 scientists signed the "World Scientists' Warning to Humanity" in 1992, arguing that "[f]undamental changes are urgent if we are to avoid the collision our present course will bring about" (1992 World Scientists' Warning to Humanity, n.d.), the most recent reiterations of this warning, signed by more than 15,000 scientists, carries the title "World Scientists' Warning of a Climate *Emergency* [emphasis added]" (Ripple et al., 2022). "We are now at 'code red' on planet Earth," (p. 1149) the scientist emergency warning starts, marking the distressing urgency compared to the 1992 version. And, notably, it contains a comment about the intensified activist and advocacy work by the scientific community:

Recent years have seen an unprecedented trend in scientists speaking out on the climate crisis. We applaud this trend and view it as a natural consequence of scientists being citizens concerned about the preservation of the planet for future generations. (p. 1151)

The authors of this warning, then, are picking up on the radicalization of some scientists, and condone it, characterizing the scientific community as responding to a *general* planetary crisis, affecting every major aspect of nature and civilization. In the above quote's remark about being concerned citizens, a sense of scientist rhetorical citizenship is performed (Pietrucci & Ceccarelli, 2019), echoing Oppenheimer's famous line "we are not only scientists; we are men, too" (although without Oppenheimer's default sexist vocabulary).

However, many accounts of rhetorical ethos of science and scientists focus on specific scientific controversies, often honing in on specific scientists. For instance, Lisa Keränen's (2010) chapter on "Competing Characters in Science-Based Controversy" investigates the case of cancer researcher Dr. Bernard Fisher and the conflict around his breast cancer research. She does so to offer theoretical, methodological, and practical insights into scientific ethos in the context of a medical scientific controversy. In analyzing the character constructions of Fisher, Keränen understands ethos as "the available norms of a culture or group," which "circulate the broader culture, are malleable through language, and largely pre-exist a rhetor's speech" (p. 137), thus employing the concept as a baseline term against which to critically assess the persona and voice of a specific scientist in a given controversy. This is a very meaningful way of analytically employing the concept of rhetorical ethos in a science context; it consciously straddles perspectives focusing on the audience's perception of an individual scientist-speaker (Prelli, 1989, p. 105) and perspectives viewing rhetorical scientific ethos as a broader community-based characterization of science as a collective (Miller & Halloran, 1993, p. 121) in order to "measure individual performance against collective values" (Keränen, 2010, p. 136) in a specific case.

However, to describe the climate and ecological emergency and crisis as a (scientific) controversy would not be missing the mark. Although there are no shortage of scientific controversies surrounding climate science matters, the overall crisis is exactly
that: a crisis, generalized and urgent. In terms of science's position in climate politics, we cannot point to a single conflict surrounding a set number of scientists in order to grasp the ethos developments within it. Instead, it affects science and scientists on a broad scale, shifting the conditions for identity formation, of science and the wider culture, more fundamentally. Thus, where accounts like Keränen's contribute with a focus on *controversies* and *specific scientists* to say something about "how language strategies potentially help or hinder the public and professional face of scientists" (p. 134), this dissertation focuses on *crisis* and the *movement(s) of scientists* to say something about the ever-shifting relations of science and society (Jasanoff, 2006). My work does not dive into how scientist activists strategically tap into or fail to tap into background assumptions and values about science in the given culture in which they perform direct actions and other rhetorical performances. Rather, these assumptions and values are themselves subject to disruption and change in the climate and ecological emergency, and I see the scientist activities as important movements creating ruptures within this landscape.

In fact, each article in this dissertation contains claims about how scientist activism in the climate and ecological emergency is at the bewildering center of rhetorical renegotiation of scientific ethos. In "Rebelling Scientists at the Climate Ministry", the movement from one place to another of the Nordic Scientist Rebellion activists productively create a public debate on the role of scientists in society. In "Publish and/or Perish", I describe a shift on rhetorical circumstances for science, where scientists are no longer mainly struggling to defend basic evidence of global warming but can 'go on the offense' as powerful stakeholders outwardly accept the basic evidence even as they greenwash their image and delay policy. In "Bodies On or Off the Gears of the Science Machine?", the struggle around scientific ethos is present in the scientist activists' blockage of the Science Museum in London: They are simultaneously rebelling against and working inside the powerful Science Machine, causing a rift in identity for science. And finally, in "Impure Methodology", I reflect on the uncanny ways that these times of unrest have shaped my own research trajectory and how rhetorical critics/critical rhetoricians might benefit from taking seriously transdisciplinary and transsectorial impurities in an unraveling biosphere.

3.4 A Comment on Counterpublics

Before moving on to an overview of the four dissertation articles, I want to briefly clarify why I do not make use of the brilliant scholarship on the rhetoric of counterpublics in this dissertation. Departing from Nancy Fraser's (1990) seminal critique of Jürgen Habermas' (1989) theorization of the public sphere, rhetorical scholars have taken up this problematization of communicative universality in various, very influencial ways (Asen, 2015; Chávez, 2018; Foust et al., 2017; Pezzullo, 2003; Warner, 2021). A few stabs have even been made in putting counterpublic rhetoric into contact with the rhetoric of scientists, most notably Brett Jacob Bricker's (2019) account of "scientific counterpublics" in the struggle to ban ozone-layer-destroying CFC gasses in the 1990's . However, neither of my articles go into deeper conversation with this vein of rhetorical scholarship. This was not always so. In fact, for quite some time I was operating with the idea of 'technical counterpublics' as an analytical lens through which to study scientist activist movements. Although an interesting and somewhat catchy term, seemingly sparking interest with anyone within the rhetorical scholarly community with whom I mentioned it, I ended up abandoning it for several reasons.

Bricker's (2019) study looks at the debate over CFC gasses and their negative impact on the ozone layer, approaching it with a rhetorical conception of counterpublics. He focuses on the rhetorical efforts of scientists in public and their arguments for tight regulations of these gasses – efforts that eventually proved successful (alongside other environmental campaign work) in diverting this particular environmental issue. According to Bricker, current climate and environmental debates can be informed by the way that scientists stood up against ozone depleting industrial activity by acting as "scientific counterpublics", since "ozone scientists who performed as public intellectuals served a counterpublic function by publicly opposing the dominant anti-science discourse funded by CFC producers and manufacturers" (p. 10). According to Bricker, viewing these scientists as constituting a counterpublic usefully expands "what constitutes a marginalized/ subaltern *public*" (Ibid.). However, for reasons given below, I am not sure that this expansion is helpful neither to counterpublic scholarship nor to understanding scientist activism and advocacy.

As Robert Asen (2000) points out, the 'counter' in the term counterpublic, or counterpublic sphere, cannot be reduced to specific groups of persons, places, or topics. It

is located in discursive practice itself. At the same time, counterpublics are most usefully at least in the context of activism and social movements - understood as rhetorically constructed and maintained communities of non-dominant groups that offer on the one hand an outward challenge to domination and on the other the potential for enclavebuilding to foster solidarity and community outside of oppressive norms (Chávez, 2018; E. E. Miller, 2020). This perspective makes Bricker's use of the term technical counterpublic untenable. It seems insufficient to claim that scientists' willingness to "leave the laboratory" in order "to form a public that was counter to these well-funded skeptics [of the CFC lobby] by expressing opposition publicly, opening discursive space through different avenues of public media, and rhetorically participating in multiple publics" (p. 6 and 7 respectively) makes them a counterpublic, since on this definition, counterpublicity becomes more or less the act of some (in this case, scientific) public disagreeing with some other (in this case, corporate) public. It becomes problematically close to merely describing one group disagreeing with another on any given issue within the larger public sphere. This leads Bricker to dub popular and media savvy scientists such as Bill Nye and Neil DeGrasse Tyson as counterpublic rhetors (p. 10).

Overall, the rhetoric of the scientist activists studied in this dissertation is not comfortably construed as counterpublic, even as it employs activist modes of engagement often seen with counterpublics. In fact, one could say that it is exactly the seeming *lack* of counterpublic rhetorical practices that proves troublesome for the scientists activists analyzed in this dissertation's articles. To the extent that the scientist activists rely on the institutional reputation, credibility – and, ultimately, authority and power – of science without challenging mainstream science's complicated and problematic relations to the political landscape from which the climate and ecological crisis has grown, their activist rhetoric, at least partly, inscribes itself in a dominant public frame. To quote Michael Warner's (2021) differentiation between public and counterpublic rhetoric:

Dominant publics are by definition those that can take their discourse pragmatics and their lifeworlds for granted, misrecognizing the indefinite scope of their expansive address as universality or normalcy. Counterpublics are spaces of circulation in which it is hoped that the poesis of scene making will be transformative, not replicative merely. (p. 88) Although scientist activists by definition aim at transformation in some regard, they might still take the role as scientist and the societal significance and authority of mainstream science for granted in their rhetorical practice. However, future research might find scholarship on counterpublic rhetoric to be critically informing on scientist activism in a way that my research trajectory has lead me away from. Indeed, I would welcome this.

4. Overview of the Articles

This dissertation contains four research articles, all related to the overall research questions but approaching them from different angles. The order in which they appear holds no fundamental significance and they can be read independently of one another. The following summary of each article is more extensive than their abstracts to provide the reader with a more comprehensive understanding of the work before I move to the introductory chapter's final concluding remarks on my overall research questions.

<u>4.1 Publish and/or Perish: Scientific Journal Commentary for Social Action in the Climate</u> <u>and Ecological Emergency</u>

This article examines two journal publications related to climate and ecological science: Climate scientists Bruce Glavovic, Timothy Smith and Iain White's (2021) "The tragedy of climate change science" and Charlie Gardner and James Bullock's (2021) "In the Climate Emergency, Conservation Must Become Survival Ecology". Both articles argue for radical action to be undertaken by their scientific peers. The former argues that because of the inaction on the climate policy agenda – with ever-rising greenhouse gas emissions running parallel with scientific and advocacy efforts to decrease them – climate scientists should instate a moratorium and stop further research until the contract between science and society is restored. The latter argues that conservation biologists should abandon the conservationist ideals attempting to preserve ecologies that will inevitably break down in the near future because of the biospheric changes caused by climate change. Instead, Gardner and Bulluck argue, they should shift to a paradigm of so-called survival ecology that attempts to accommodate more sensibly to the unstable world to come, including a component of scientist activism and civil disobedience as part of scientific duties.

I first describe the broader context in which this specific discussion within climate and ecological sciences appears. I argue that, broadly, scientists have been greatly cautious of association with the 'a-words': advocacy, alarmism, and activism. Generally, scientists have tended to eschew drama (Brysse et al., 2013) in order to live up to perceived ideas about science as disinterested, which has led them to shy away from debate. Vested interests in the fossil economy, on the other hand, have not operated according to such restraints and have strategically influencing public opinion against the findings of science (Antonio & Brulle, 2011; Brulle & Werthman, 2021; Ceccarelli, 2011; Oreskes & Conway, 2010). However, these actors are gradually shifting from espousing discourses of *denial* to discourses of *delay* (Lamb et al., 2020), which have created a new shift in the broader climate and environmental debate: Instead of having to perpetually defend themselves against attacks on their work, scientists can now go 'on the offensive' as big corporate players and the neoliberal political class have outwardly accepted the fact of anthropogenic global warming and instead turned to pushing non-transformative 'solutions'. The two articles examined come to the surface in this discursive shift.

Next, I read the articles in their specific genre context. Drawing on work by Amy Devitt (2021) I approach the two articles as employments of the scientific journal commentary article genre for social action, attempting to persuade their scientific peers to pick up radical action. From there, I closely analyze the texts' argumentation. Drawing on Jeanne Fahnestock's (2002) work, I argue that the guiding rhetorical figure in Glavovic, Smith, and White's article is the *ploche* as they repetitively lament the breach of the science-society contract, whereas Gardner and Bullock's article is characterized by *antithesis*, seeking to move their audience from one idea about the discipline of conservation to another. I argue that Gardner and Bullock's antithetical argumentation for scientist social action more productively tap into the processes of co-production of science and society (Jasanoff, 2004; 2006) than do Glavovic, Smith, and White's tragic employment of the *ploche* in their moratorium call.

Ultimately, I intend for this rhetorical critique to complicate the assumption within the climate and environmental humanities that humanities dealing with culture, values, and politics should 'take over' from science disciplines on the climate issue, since it is now a political issue, not a question of knowledge. This article thus shows how this demarcation between science and politics should not be drawn too hastily as renegotiation of scientific ethos and its relation to the climate and ecological emergency is very much alive within 'harder' sciences themselves.

The article has been accepted for the anthology *Speaking Truth to Power and the Power of Truth: How Science Engages Politics, Public Knowledge, and Activism* (ed. Pamela Pietrucci and Leah Ceccarelli) in Springer's *Rhetoric, Politics and Society* series, estimated to publish in 2024.

<u>4.2 Rebelling Scientists at the Climate Ministry: Unrestful Scientific Ethos at Scientist</u> <u>Rebellion's Teach-in Demonstration</u>

This article focuses on a specific scientist activist protest event in which a group of researchers addresses the wider public: the Nordic Scientist Rebellion movement's teachin demonstration at the Climate Ministry in Copenhagen in October 2021. The scientist activists constructed an impromptu classroom on the stairs of the ministry where they held lectures on various climate and environmental issues. The activists were thus there *as scientists* to voice their dissatisfaction with the Danish government's insufficient climate politics.

In light of current planetary and epistemic crises – crises of politics, science, and the biosphere – I argue that insights from environmental rhetoric, rhetoric of science, and social movement rhetoric can inform our perspective on scientist activist events, a rhetorical practice and phenomenon that has not received a large degree of rhetorical critical attention as of yet. I suggest that a rhetorical realism (Cloud, 2018) can usefully guide critics to new perspectives on scientific ethos (Ceccarelli, 2020; Walsh, 2013) in the Anthropocene.

I approach Scientist Rebellion's teach-in by looking at the somewhat surprising amount of media attention that this particular direct action received. As radical interruptions and disruptive tactics by environmental protesters often serve the function not just of garnering attention on an issue but also, on a deeper level, poses questions about ideological assumptions in a given society (DeLuca, 1999; Pezzullo, 2001), examining the way that the protest action circulated in the media sheds light on the protest's function and provides a way into understanding how scientific ethos is negotiated in the scientist activist rhetoric and its reception. Scientist Rebellion's explicit aim was to call the politicians to act on the scientific knowledge available but the issuing discussion centered mainly on questions about the role and responsibilities of scientists: If they are scientists, how could they also be activists? Can they still be objective? What were *they* doing *there*?

As my analysis of the media sources unfolds, two primary focus points come to the fore: The way that questions about the ethos of scientists are continually posed and treated in the media coverage, and the way that locality and space come to play an important part in how the questions of scientist ethos arise. The interplay between these two levels of the event's coverage has the function of disrupting conventional "crude positivist or objectivist philosophy of science" (Ceccarelli, 2011, p. 215) often intuitively held by lay audiences as the scientist activists move from a traditional institutional site (the classroom or laboratory) to a more public and explicitly political arena (the street in front of the ministry), thereby causing a temporary reconstruction of a meaning of the place (Endres & Senda-Cook, 2011). This observation leads me to propose a need for supplementing more widespread notions of scientific ethos within rhetorical studies with a place-focused ethos of *unrest*. That is, where prominent scholars of ethos have focused on ethos as a dwelling place or abode for the continuous construction of moral character (Hyde, 2004), I suggest that scientist activist movements in the climate and ecological emergency show that ethos in the Anthropocene often more meaningfully can be seen in light of what Brian Massumi (2017) calls "the principle of unrest". Thus, ethos becomes as much a question of movement between places caused by crisis as a question of gradually building a place do dwell rhetorically/with rhetoric.

I conclude the article by suggesting the above perspective on the negotiation of ethos in activist practice can aid movement efforts in the climate struggle in a way that more dogmatic approaches to change and transformation overlook. That is, I agree with Catherine Foust and Raisa Alvarado (2018) that a "humanistic focus allows researchers to acknowledge the fluidity and diversity of social movement and rhetoric" (p. 14). Scientist Rebellion's teach-in and the way in which it was able to circulate in the media implores us to consider more attentively how scientists can use unrestful rhetoric of place to disrupt and complicate common ideas about science and society in a climate crisis. This article is soon to be published in Danish in the journal *Rhetorica Scandinavica* (Appel Olsen, in press). The version contained in this dissertation is my translation of this article into English.

<u>4.3 Bodies On or Off the Gears of the Science Machine? Scientist Activist Ethos and</u> <u>Machinic Logics at the Science Museum</u>

Like "Rebelling Scientists at the Climate Ministry", this article is a rhetorical critique of a specific scientist activist protest: The British Scientist Rebellion movement's extensive protest at the Science Museum in London on May 19, 2021. On that particular day, the Science Museum opened "Our Future Planet", a special exhibition on carbon capture and storage (CCS) and other technologies designed to counter anthropogenic climate change. "Our Future Planet" was sponsored by the oil company Shell and this fact was the source of the scientists' grievance: Seven scientists locked themselves to the 'mechanical trees' inside the museum while protestors outside the entrance had, among other things, brought a 'Greenwashing Machine' to call out Shell's insidious greenwashing agenda and urge the Science Museum to cut ties with Big Oil.

First, I briefly outline the way in which rhetorical scholarship on bodily rhetoric, rhetoric of science, and protest rhetoric can all be productively informed by rhetoric 'crossing over' all subfields, such as the museum blockage in question. From there, I describe four instantiations of what I choose to call 'machinic logics' at play in this particular protest event:

1) the logic of *the climate functioning as a machine* permeating geoengineering solutionism,

2) the logic of *the climate denial and delay machine* effectively blocking meaningful climate policies for decades,

3) the countercultural logic of *oppressive power as machine*, which functions in opposition to the former two, and

4) what social theorist and critic C. Wright Mills (1958) calls "the Science Machine": the political-technical dimension of the global knowledge infrastructure that is climate science and its links to the fossil economy's drive towards destruction. Pointing to these logics holds two main purposes: Firstly, it allows for understanding the machinic in a political context differently from influential posthumanist accounts (Deleuze & Guattari, 2004) and in a more directly strategic perspective where a machine is a technological device producing something for someone on the backs of others. Secondly, these machinic logics co-structure the rhetoric of the Science Museum protest; clarifying their significance helps us understand the strengths and insufficiencies in scientist activism grappling with the identity of science and the technologies leading to planetary destruction.

I then turn to the live stream of the Science Museum protest as it was curated by Scientist Rebellion themselves. Here, we not only see the direct action unfolding but are also presented with 'statement' clips with each of the scientist activists chained to the CCS machinery explaining their reason for taking radical action as scientists. I show how the activists do well at satirizing and interrupting logics 1 and 2 utilizing the vocabulary of logic 3, while foregoing the opportunity to engage more deeply with logic 4. Scientist Rebellion's use of the 'Greenwashing Machine' and their bodily interruption of "Our Future Planet" powerfully use scientific ethos appeals to resist Big Oil's greenwashing strategies, yet they fail to grapple with science's own institutional investments with the techno-political developments with which science finds itself in tension. Facing and questioning this aspect of scientific ethos in the climate and ecological emergency is, I argue, an important challenge for scientist activist movements to which rhetorical criticism concerned with science, environmentalism, and social movements can contribute.

<u>4.4 Impure Methodology: Biospheric Crisis, Critical Rhetoric, and Scholarly Engagement</u> <u>in the Uncanny Present</u>

This essay reflects on methodology of rhetorical criticism's turn towards critical rhetoric, and in particular on the development towards participatory critical rhetoric (PCR) (Middleton et al., 2015). Importantly, I here separate questions about method and methodology, following Laurie Gries' (2015) distinction, where *method* is the specific way that rhetorical artefacts are handled in analysis using a more or less defined set of guidelines and *methodology* is the overall strategic approach to thinking about and

attempting to understand rhetorical phenomena as well as the objectives and aims of the research as they develop through the research process.

First, I outline main developments in scholarly engaged frameworks for rhetorical criticism from Philip Wander's (1983) ideological turn in rhetorical criticism and Raymie McKerrow's (1989) critical rhetoric in the 1980's up to the more recent PCR. I argue that McKerrow has had a leading influence on participatory formats. Guided by Dana Cloud's (2020) assertion that "critique must happen in conjunction with practical political activity if it is to be relevant at all to the democratic project" (p. 217), I contend that it would be productive to work deeper with Wander's (1983) call for ideological rhetorical criticism to recognize "the existence of powerful vested interests benefitting from and consistently urging politics and technology that threatens life on this planet" (p. 18) to widen the meaning of participation in line with developments within the historically overlooked climate and environmental rhetoric field (Endres, 2020; Pezzullo, 2016).

To reflect critically on questions of methodology and participation, I describe my own research trajectory of the past three years where I have been involved with activism in various forms and senses: interacting and working with scientist activists as well as participating in debates in the Danish public about 'activist research'. I describe my participation in these movement activities and debates as 'awkwardly ambivalent', which leads me to interpreting the critical rhetoric tradition in light of the climate and environmental crisis, drawing here especially on Rebecca Bryant's (2016) notion of "the uncanny present".

From here, I develop what I call 'impure methodology' resting on accounts of impurity in critique and science by Alexis Shotwell (2016) and Steven Epstein (1996). As a methodological orientation, impure methodology suggests that the scholar works consciously with problematics of one's time as it may encroach on the research project in unpredictable yet productive ways. To round off these reflections and suggestions, I present nine 'pseudo-principles' intended to serve as inspiration for working with and through the impure relations of science and research, politics, climate change and environmental degradation, activism, and more. Thus, I propose that impure methodology constantly questions purist separations of the spheres of science and society, privileges neither closeness nor distance, is fundamentally participatory, implies no fixed method or set of methods, is transdisciplinary, contributes to the conversation in other fields and disciplines

about undoing the harmful norms of the neoliberal university, is mindful about power structures and unjust hierarchies (although seeking to avoid reifying these structures and hierarchies), is difficult to detect in the 'finalized' scholarly text, and is always in doubt.

5. Conclusions and Openings

I submit this dissertation on August 31st, on a lukewarm afternoon, at the end of what will likely be the warmest summer on Earth on record (NASA Clocks July 2023 as Hottest Month on Record Ever Since 1880, n.d.). During the last couple of months, floods have devastated towns and cities in Norway, China, Slovenia, and India; forest fires have ravaged Greece, Canada, Australia, and Kazakhstan; unprecedented heat waves have killed people in Mexico, Iran, the US, and Mali. Indeed, floods, fires, and heat waves are devastating, ravaging, and killing in these places and so many more as I write these words and will do so well into the time to come. Writing this conclusion, I am gripped by a sense of despair, yet I try to cling to hope. At least, I hope that this dissertation and its impure relation to the climate debate, and debates about engaged scholarship and activism in the Danish public and university community, will inspire some sense of urgency as I grapple with how to do more in the time post-PhD.

In the overview of the dissertation's articles above, I summarize their main arguments and conclusions. This final section of this introductory chapter therefore offers a meta-perspective on the articles' findings, questions, and challenges. My hope for this dissertation is that it might *open* important and timely conversations in the field of rhetoric and beyond, and less to claim to settle the ongoing problematics of rhetoric, science, activism, and ethos in the Anthropocene.

I here reiterate my overall research questions:

How do contemporary expressions of scientist activist rhetoric unfold and function within the broader spectrum of knowledge work and climate politics? How is scientific ethos (re)negotiated in scientist activist rhetorical practices in the climate and ecological emergency? What would productive trajectories for scientist activism in times of crisis look like, and how can we get there? In line with the above introductory chapter, the summary of the articles, as well as the full content of each of them, I propose the following insights responding to the research questions:

- The climate and ecological emergency imposes challenges on scientists and some scientists respond to them with radical acts of protest *as* scientists such as forming social movements and engaging in acts of civil disobedience. These activities arise at a time when powerful stakeholders of the fossil fuel economy shift from denying climate science to accepting its fundamental claims and instead seek to delay meaningful action in other ways. This discursive shift provides scientists with new rhetorical opportunities for arguing against climate and environmental destruction in a time of crisis.
- As scientists respond to the above challenges and opportunities, they inevitably engage in a rhetorical (re)negotiation of what the role of the scientist in society *is*: of scientific *ethos*. This unfolds as they move their scientist bodies from one place to another, and as they make claims about what scientists should and should not support and resist.
- As they engage in activist practices like civil disobedience and protests elsewhere than their institutional sites, scientist activists addressing the climate and ecological crisis are often good at interrupting the logics driving the climate and environmental crisis, exactly because they can use body and place in creative and unexpected ways to create attention and disruption of the agendas of powerful actors. However, a future trajectory of movement work could include increased attentiveness to the political-ethical dimensions of institutional science itself. Scientist activists might strategically tap into the process of co-production of science and society instead of inadvertently reifying a strict demarcation of science and politics as a means of positioning their epistemic authority more productively in climate struggles.
- Approaches to social movement work focusing on predetermined guidelines applicable to all protest events risk missing the specific situation in which each event unfolds. This

might be especially true in scientist activism as an area of protest with a somewhat eclectic expression 'crossing' the role of scientist and the role of activist. A rhetorical-humanistic conception of movement work might attend better to the contingency of complex protests in the Anthropocene.

- Theoretical assumptions about the gradualism and stability of rhetorical ethos are problematized in the light of scientist activism in the climate and ecological emergency. An urgent and complicated crisis, this emergency calls for thinking as much about movement and ruptures in social relations as they are rhetorically (re)formed as about dwelling.
- For the engaged rhetorical critic, working in a range of participatory registers can assist and inform movement efforts in the climate and ecological crisis. Since there is no stable set of methods to do this in the all-encompassing and unrestful Anthropocene, rhetoricians and other scholars concerned with climate and environmental struggles can benefit from embracing the impurity of the uncanny present of our age.

I have named this final section 'Conclusions and Openings' to accentuate the invitation to further work on these topics and questions. As I have already noted, I aim to open conversations in- and outside the field of rhetorical studies just as much as I wish to conclude. In the slipstream of the above conclusion points, then, I offer two pointers as to how they can open up conversations in different areas of future research.

First, social movements and activism are obviously not going anywhere – to the contrary, upon entering the 2020's, it has been suggested that we live now in the age of mass protests (Brannen et al., 2020). As prominent social movement scholar Donatella della Porta (2022) has recently noted, "progressive social movements develop in moments of intense change, mobilizing with the aim of turning [emergencies] to their advantage," and given recent crises like the COVID-19 pandemic and the climate and ecological emergency, "attention [in social movement studies] has turned anew to the role of social movements in exceptional periods, as opposed to normal periods" (p. 9). The upheavals that we experience on a global scale not only foster *more* activism and social movement activity but

also new complex movement expressions and activist performances. In other words, it is likely that we can expect more movements like Scientist Rebellion drawing upon official and institutional settings and identities to engage in countercultural disruptive strategies. This speaks to a trend where especially movements adopting civil disobedience will have to develop a "repertoire" of methods and expressions for their specific way of enacting resistance (Ollitrault et al., 2019, pp. 185–214). In this context, activism scholar Benjamin Sovacool (2022) points to the need to enlarge "repertoires of contention" (p. 16) for modern activists employing disrupting tactics. We may, then, also dive more deeply into the *rhetorical repertoires* of social transformation from the bottom up.

This dissertation carves out a space for itself in the larger landscape of social movement studies – a space that can be enhanced and evolved in years to come, by rhetoricians and other scholars. Working within this space, we can ask: How do emergency movements become comprised of a cacophony of political logics and social identities? How does this comprising change the rhetorical affordances and constraints of such activist rhetoric? If radical movements find a large part of their purpose in establishing "prefigurative legitimacy" through their actions (Berglund, 2023), what are the rhetorical aspects of such prefiguration?

Second, although political rhetoric has received extensive critical treatment in a Danish as well as Nordic context, activism and social movements have received surprisingly little attention from rhetoricians here. However, the stepping-stones are being laid for more extensive rhetorical research of these subjects in the Nordic countries these years. As I write this, a special issue of the *Rhetorica Scandinavica* journal specifically thematizing the rhetoric of social movements in the Nordic countries is in press, edited by Kristine Marie Berg, Esben Bjerggaard, and Frida Buhre. As noted above, one of this dissertation's articles (Appel Olsen, in press), translated as "Rebelling Scientists at the Climate Ministry", appears in this special issue. Thus, I see my dissertation work as generally contributing to this development toward recognizing movements and activism as a central area of study, not least in a time of multiple and intensifying crises. Thus, my work joins other earlycareer scholars examining topics such as abortion rights movements in the Faroe Islands (Nolsøe, in press) and anti-racist protests in Denmark (Broberg, in press) in a critical framework. Engaging with the climate and ecological struggle, the rise of aggressive xenophobia, the fight against reactionary backlash to gender minority rights in the context of the social movement rhetoric, the rhetoric of political emotions, biopolitics, feminist rhetoric, and post- and decolonial criticism are more needed than ever.

These subjects have been extensively treated by rhetoricians based at American universities for decades, and I strongly disagree with rhetorical scholars based in the Nordic region who argue that 'the Americans' are too "activist" and "politicized" (Bjørkdahl, 2020; Kjeldsen, 2020). Instead, as this dissertation's bibliography makes evident, I think there is a lot to learn from scholars in the US, especially when dealing with politics and social change in rhetorical perspectives. Instead of bolstering regional isolationism, we should open ourselves further to ideas flowing from the US and elsewhere. This opening toward ideas can be generalized: This dissertation's articles brings subfields of rhetorical scholarship in conversation (rhetoric of science, social movement rhetoric, climate and environmental rhetoric, and more), it brings subfields of the humanities and social sciences in conversation, it brings sciences in conversation with activism(s), it brings public debate in conversation with research and vice versa. Ideas should travel. Border-crossing ideas are the only ones that can productively grapple with border-crossing crises and emergencies. If Gramsci (1971), that mastermind of conjunctures, is right, also today, that "[t]he crisis consists precisely in the fact that the old is dying and the new cannot be born ..." (p. 276), let us move across many places, unrestfully, to understand the possibilities for transformation hidden among the myriad morbid symptoms.

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Publish and/or Perish: Scientific Journal Commentary for Social Action in the Climate and Ecological Emergency

Abstract: A common conception within environmental humanities is that the natural sciences have already done their job in terms of observing and analyzing the climate and ecological crisis and that now the climate justice struggle is political, not scientific. This article complicates this conception with a rhetorical-critical reading of two scientific articles discussing the role of science in the climate and ecological emergency: one calling for a moratorium for climate science (Glavovic et al., 2021) and another calling for a turn from traditional conservation efforts to "survival ecology" (Gardner & Bullock, 2021). First, it is argued that developments in the climate debate broadly have shifted the relationship between scientists and the 'a-words' (advocacy, alarmism, and activism) to become less defensive on the part of climate science. Second, it is shown how the two articles use the scientific article genre for social action (Devitt, 2021) in the climate and ecological emergency. Lastly, it is argued that the article calling for survival ecology uses the rhetorical figure *antithesis* to position itself more productively within the co-production of science and society than the moratorium call's use of the figure *ploche*.

Keywords: Scientist activism, climate delay, climate and ecological emergency, rhetoric of science

Introduction

Should scientists continue their production of evidence of the climate and ecological crisis, even as nowhere near enough action is taken by political classes to curb its disastrous consequences? Should they take on radical actions such as civil disobedience, should they reframe the objectives of their research fields, or should they perhaps stop working on climate science entirely until fundamental changes are made to address global warming and environmental destruction? Members of the scientific community working with climate and ecological matters are debating these questions as the planet steadily heads for at least 3-4 degrees Celsius rise in average temperature, despite the fact that the reports of

the UN's Intergovernmental Panel for Climate Change have been warning the public about this outcome for decades. It is often claimed that climate protection and mitigation efforts are now not scientific but political problems; that it is not enough anymore, if it ever was, to be scientifically 'right' in order to persuade policy-makers to act (De Keersmaecker et al., 2022; Huber, 2022; Lawrence & Laybourn-Langton, 2021; Mann & Wainwright, 2018; Pohlmann et al., 2021). However, the idea that 'science is not enough' or 'the scientists have already done *their* job – now we need *political* action' assumes a somewhat static sense of scientific disciplines and scientific work, and contains an implicit claim that science is separate from politics and action. That is, it assumes that the climate and ecological crisis will somehow 'move on' from the disciplines that has diagnosed its severity to an altogether different sphere of discourse and action.

This article implores its reader to critically reflect on this intuition about science and society in the context of climate politics. The deterioration of the state of the planet's ecosystems does not only have ethical, social, and political consequences but also consequences for the conditions in which science operates. Scientists are themselves debating whether and how to reshape their fields to accommodate this reality and exert a fitting response to its severity. Scholars of the rhetoric of science have argued that scientists must take seriously their responsibility as rhetors in the public sphere, and as rhetorical citizens, in order to persuade the general public of the truth and vital importance of their findings (Fahnestock, 2020; Pietrucci & Ceccarelli, 2019). Rhetorical criticism examining scientific expression and culture can contribute to understanding and evaluating this negotiation of the aims and utilization of knowledge production and expertise within technical spheres, which, in turn, inevitably results in a rhetorical negotiation of scientific *ethos* in relation to climate justice.

This article examines two prominent contributions to the debate about scientists' responsibilities and options in the climate and ecological breakdown: Ecologists Charlie J. Gardner and James M. Bullock's "In the Climate Emergency, Conservation Must Become Survival Ecology" (2021) and climate scientists and IPCC report contributors Bruce C. Glavovic, Timothy F. Smith, and Iain White's "The tragedy of climate change science" (2021). The former argues that conservationists should abandon the traditional goal of preserving a world that cannot be preserved and instead shift to a proactive survival ecology paradigm for the field with a component of civil disobedience; the latter calls for a climate

science moratorium where scientists stop their work in protest of climate inaction. The former publishes in order to avoid planetary perishing; the latter argues that continued publishing will only nudge us closer to perishing.

I first discuss some of the scientific-cultural norms that have traditionally discouraged scientists from expressing themselves in ways that might associate them with what I call 'the a-words': advocacy, alarmism, and activism. Secondly, I argue that recent developments in political struggles over climate change and the green transition have opened up a new discursive space for scientists to engage in more radical displays of dissent, fostering novel and/or more radical uses of the scientific journal article. Thirdly, I take a closer look at the two journal articles, examining their argumentation. Drawing on Jeanne Fahnestock's (2002) work on rhetorical figures in science I show how the figures ploche and antithesis are guiding Gardner and Bullock's and Glavovic, Smith, and White's argumentation respectively, and discuss important differences in these two ways of employing the scientific journal commentary article to advocate social action in the scientific community. Finally, I suggest that Gardner and Bullock's antithetical text calling for a turn to survival ecology more productively accommodate the co-production of science and society (Jasanoff, 2004; Jasanoff, 2006) than does Glavovic, Smith, and White's call for a moratorium for climate science. That is, while both articles urge the authors' peers to pick up radical strategies of protest, the former has the advantage of acknowledging and incorporating the inherent flexibility of a rhetorical scientific *ethos* and rethinking their own discipline in light of the challenges facing humanity and the biosphere.

Science and 'the A-Words'

"[I]n some scientific circles," writes biologist Dominick DellaSala (2021) in a recent volume on environmental science and advocacy, "the word 'advocacy' is treated as if it were a four letter word" (pp. 4–5). As I will show in this section, this goes for not just advocacy but for all of the three 'a-words' that seem to continually haunt scientists and scholars' engagement with wider publics: Advocacy, alarmism and activism. Although some scientists, like DellaSala, are beginning to question science-advocacy dichotomies, they are not easily shaken. Climate scientist and long-time activist James Hansen (2007) calls this tendency "scientific reticence," which "hinders communication with the public about dangers of global warming," (p. 1) as it fosters gradualist thinking and unwarrantedly conservative predictions.

In this section's conceptual tripartition, I list the a-words in what I consider to be gradually increasing perceived severity, from advocacy as the mildest concern to alarmism and, especially, activism as serious accusations for scientists leveled by other groups or internally in the scientific community.

Advocacy. The 'four letter word' advocacy is, arguably, the broadest of the three, encompassing the two others, and therefore the least controversial. In the words of Robert Cox and Phaedra Pezzullo (2017), advocacy is "the act of communicating in support of a specific cause, policy, idea, or set of values" (p. 203). Many scientists are aware that some degree of advocacy is always present in their work and dissemination, but the degree and type of advocacy continues to be discussed within technical spheres, especially as modern digital media landscapes offer new possibilities and constraints for public participation by scientists (Schmidt, 2015).

Despite many historical examples (Kuznick, 2019; Moore, 2008; Racimo et al., 2022, pp. 8–9), with organizations such as Union for Concerned Scientists still in operation, scientist advocacy is often regarded with some suspicion within both technical and public spheres. For instance, Roger Pielke's (2007) well-known work concerns the question of the role of scientists in relation to policy matters. Of his four idealized roles for scientists, the "issue advocate" becomes too explicitly political for Pielke, who settles for the figure of "the honest broker". Advocacy, Pielke argues, risks jeopardizing credibility: "In the process of couching advocacy in science, scientists risk damaging the potentially positive contributions of their own special expertise to effective decision-making" (p. 121). This perceived risk may, of course, vary in different scientific disciplines and political contexts. Conservation biology (the field in which Gardner and Bullock's article is situated) has a special relationship to normativity and political responsibilities than most fields (I will return to this later). But even here, researchers tend to disagree on the legitimacy of advocacy *as such*, as conservation biologists Michael Nelson and John Vucetich (2009) have shown.

In the rhetoric of science field, scientific rhetoric is often identified, ex- or implicitly, as moving along the earlier stages of the *stases* of classical rhetorical theories of argumentation, namely the stasis of fact, definition, value, but not action. Indeed, the

fourth *stasis* is often interpreted as exclusively concerning the question of whether the appropriate court of jurisdiction is being applied, and not what course of action would be appropriate given the circumstances laid out in earlier *stases* of argument³ (Gross, 1990, pp. 7–9, 2006, pp. 22–24). As Lynda Walsh (now Olman) shows in her book *Scientists as Prophets* (2013, p. 89), it is often not scientists themselves who move 'upward' towards the *stasis* of action, but audiences that perceive arguments on the previous *stases* as being more advocative than they actually are, due to their yearning for prophetic guidance. This tendency, in turn, may lead scientists to seek (overly) cautious approaches to sharing their research and opinions.

However, environmental and climate scientists, and scientists in general, may have a lot more leeway in terms of advocacy than they realize (Donner, 2017). A widely-cited empirical study by John E. Kotcher et al. (2017) suggests that when scientists argue in favor of specific policies on climate, it has no discernable impact on their individual credibility or the overall credibility of the scientific community. Another study (Cologna et al., 2021) asked German and US citizens to what degree they expect climate scientists to get involved in policy discussions and advocacy, concluding that the "majority of citizens agrees that scientists should advocate for climate-related policies and work closely with policymakers but refrain from endorsing climate protests" (p. 1). As this finding shows, publics' ideas of the role of science and politics is complicated – however, advocacy is expected, at least in some policy areas such as climate.

This is not to say that it is in itself problematic to point to potential pitfalls concerning scientific advocacy. Indeed, we should always have such pitfalls in mind to avoid naivety in regards to scientific rhetoric's potential for productive engagement in debates and policy processes. However, an overemphasis on the perils of advocacy risks

³ This is of course a reasonable application of stasis theory and it is supported by various sources, both antique and modern. However, many rhetoricians have sought to interpret the *stasis translatio* beyond a forensic context to also concern questions of future action. This move makes *stasis* theory applicable to deliberative contexts. Whether to make this move within a rhetoric of science context ultimately depends on one's view on science and society.

reproducing scientists' often unfounded concerns about loss of credibility. Furthermore, excessive fear of advocacy does not sufficiently account for the discursive shift in the overall climate change debate that is the subject of this article's coming section.

Alarmism. Of the three a-words, alarmism is the only one that is almost exclusively used derogatorily. Although some climate researchers, and indeed many climate justice social movements, use phrases such as 'code red' about the climate 'emergency' (Ripple et al., 2022; Spratt & Sutton, 2009), or 'sounding the alarm' (Butler, 2016; Dunk & Jones, 2020), the word alarmism is commonly taken to refer to someone needlessly exaggerating woes to come – "crying wolf" (Brysse et al., 2013, p. 331; Hansen, 2009, p. 87), so to speak. Some communication scholars explicitly cast alarmism as an ineffectual strategy for creating urgency in the climate and ecological crisis (Moser & Dilling, 2007, pp. 10–11).

In rhetoric of science scholarship, it is often taken for granted that alarmist rhetoric is to be avoided because it can create problems for the ethos of scientists. For instance, in his insightful article on scientists' rhetoric in the aftermath of the film *The Day After Tomorrow*, Ron von Burg (2012) assumes alarmism to be a negative trait, at least (or, perhaps, *especially*) when leveled at scientists: "The tendency for embroidered rhetoric in media coverage of global warming, for example, provides skeptics with discursive fodder to label scientists as alarmists who lack the critical distance of credible scientific argument" (p. 8). There are good reasons for this, since in many cases it is evident that a dilemma exists for scientists in public engagement where "they must steer a difficult course between the caution demanded by the scientific community and the closure demanded by the public" (Killingsworth & Palmer, 2012, p. 272). This cautiousness, again, invites the toning down of otherwise strong expressions.

However, this tendency towards anti-alarmist rhetoric has its downsides, especially in a global climate and ecological crisis. The international scientific community's underestimation of the existential threat of climate change has been described on numerous occasions in recent years (Bradshaw et al., 2021; Hansen et al., 2022; Huggel et al., 2022; Spratt & Dunlop, 2019; Zachariah et al., 2023). One study is especially useful in terms of understanding problematic relationships between scientists and alarmism: Keynyn Brysse et al.'s 2013 article "Climate Change Prediction: Erring on the side of least drama?" By comparing the assessments of IPCC reports across several decades to actual climatic developments measured later on, the authors show that climate scientists have

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tended to offer predictions where the impacts of anthropogenic climate change are considered less severe than the actual later developments has shown them to be. The authors suggest that scientists are offering more conservative predictions than warranted by the data because they fear being perceived as alarmists. Alarmism is thus a trait that scientists try to avoid association with because it is a concept around which certain values and character traits circulate: emotionality, impulsiveness, anguish, etc. These values and traits seem antithetical to dominating cultural norms about science and scientists that influence lay publics as well as the scientists themselves: rationality, dispassion, and self-restraint.⁴ Thus, "scientists are biased not toward alarmism but rather the reverse: toward cautious estimates, where we define caution as erring on the side of less rather than more alarming predictions" (p. 327). Reactionary forces friendly to the fossil industry have gladly played along with this tune of fear of alarmism, as "denialists commonly refer to the IPCC as 'alarmist'" (McCright & Dunlap, 2015, p. 307).

Activism. Even more so than advocacy and alarmism, activism is often regarded as a "dirty word" in scientific contexts (Parsons, 2016), and as a social category, activists are subject to negative stereotyping in general (Bashir et al., 2013). By implication, the abovementioned study by Brysse et al. would suggest that climate scientists are eschewing the drama of activism and social movement engagement at least as much as – or perhaps because of – the alarmist label.

Recent qualitative climate psychology research suggests that contrary to climate *activist* communities, climate *scientist* communities are imbedded in specialized and professional institutional structures where strong cultural norms of 'cold' rationality and disinterestedness dominate, which block incentives for emotional coping with their findings as well as engagement with the wider public (Randall & Hoggett, 2019). That is, the fear of the 'a-words' often serve a function: shielding the individual from despair and

⁴ These values and traits are gender-coded to a large degree, as feminist philosophers of science have argued for decades (Haraway, 1988; Harding, 2015; Rossiter, 1992). As Leah Ceccarelli (2013) have shown, these masculine ideas about science is embedded in scientific rhetoric historically, which, in turn, affects ideas about *who* can do scientific work and *how*.

conflict within the community as well as outside of it. Again, these defense mechanisms have certain downsides in terms of engaging with wider publics: "[S]ocial defences [sic] of logic, reason and careful debate have been of little use to scientists in this public sphere," (p. 258) as Rosemary Randall and Paul Hoggett remark in their study. Thus, the mix of science and activism is a sore point, no less so in the context of the climate and ecological crisis, since "scientist environmental activism is a deeply complex and contradictory social phenomenon" (Frickel, 2004, pp. 449–450).

The tendency to view activism as the dirtiest of the a-words is not exclusive to specific disciplines or fields. In the humanities and social sciences – where disciplines typically deal with values and politics in more obvious ways than STEM disciplines – critically inclined scholars are subject to accusations of doing "activist scholarship," which is not considered proper knowledge production (Pluckrose & Lindsay, 2020). This may be especially true within neoliberal university cultures, where activism is acceptable only to the degree that it "can be safely studied at a distance as just another subject in the scholastic marketplace," (Macdonald & Young, 2018, p. 530) and, as eminent social movement scholar Frances Fox Piven (2010) has pointed out, the activism-research dichotomy tends to be drawn into debates when scholarly activism happens on behalf of socially and politically marginalized groups in society.

Scholars of rhetoric have taken up the question of activist scholarship in various contexts and for different reasons (Andersen, 1993; Frey & Hanan, 2020; Hartnett, 2010; Lee & Kahn, 2020). However, rhetoric of science scholarship specifically has not made many inroads to the subject, neither in terms of the field's own relationship to activist practices or in studying scientist activism as a rhetorical phenomenon. There is, then, somewhat of a symmetry between the shunning of the a-words within scientific communities and the bypassing of the subject in rhetorical scholarship on science, even as rhetoricians have cultivated more nuanced understandings of the range of possibilities for scientists' public expressions and engagement. Relative balance in this domain may explain an imbalance in another: between scientists' pleas to the world to take their findings seriously and powerful stakeholders' strategic efforts to obstruct the scientists' efforts to do so. Below, I elaborate on this imbalance.

An Imbalanced Fight for Influence

While climate and other scientists broadly have been shying away from any association with the a-words, powerful corporate stakeholders with vested interests in denying the evidence of anthropogenic global warming and delaying decarbonization efforts have not been reticent in their attempts to influence public opinion and policy in accordance with these interests (Hoggan & Littlemore, 2009; Oreskes & Conway, 2010; Prothero, 2013). As Naomi Oreskes and Eric Conway (2010) and others (Bonneuil et al., 2021; Supran & Oreskes, 2017) have shown, these stakeholders have intentionally and professionally sowed doubt about the viability and credibility of scientific evidence on global warming by downplaying the consensus of the scientific community and highlighting and exaggerating scientific uncertainties, real as well as manufactured. Recent extensive mappings of the fossil fuel industry's lobby activity confirms this picture: The largest oil and gas corporations in the world have spent enormous resources on lobbying efforts to influence the political class and public opinion, often hiring the same lobbyists who have aided the tobacco industry's attack on science linking smoking with lung cancer (Antonio & Brulle, 2011; Brulle & Werthman, 2021; Oreskes & Conway, 2010). In the context of rhetorical scholarship, Ceccarelli (2011) has looked at the argumentative dynamics in the construction of manufactured controversy in three different cases, among them global warming. In this case, lobbyists such as Frank Luntz "found it easy to keep the window of opportunity open to this manufactured scientific controversy" (p. 225) by exploiting public intuitions about dissoi logoi, the idea that we should always consider both sides of a case.

Compared to the scientific community's fear of the a-words, which have caused it to inhabit defensive stances in global warming debates, fossil capitalists have had no such qualms in their intense lobbying efforts (and have in most cases had a significantly larger budget as well as better connections in the halls of governments). Seen in this light, scientists' avoidance of association with advocacy, alarmism, and activism might have resulted in severely underplaying their rhetorical hand through the decades. However, while it remains important for the scientific community to preserve credibility, we cannot assume that this is done most meaningfully by shunning the a-words. We might ask, with Brysse et al. (2013): "What use is the preservation of scientific credibility if it comes at the cost of a persuasive alert? What is credibility being preserved *for*?" (p. 331). Keeping these rhetorical dynamics in mind, it is just as likely that eschewing the drama of politics might *damage* scientific credibility. As political scientist Jessica F. Green (2020) bluntly puts it:

[W]e delude ourselves to think that reasoned analysis will dislodge the powerful. We have brought a knife to a gun fight. To stubbornly insist that the truth will prevail or that we must simply 'speak truth to power' ignores four decades of climate inaction. Such an approach overestimates our authority and thus undermines our credibility. (p. 157)

Nelson and Vucetich (2009) even argue that 'not bringing the gun' often inadvertently aids some of the actors who will: "Quite apart from whether neutrality is an appropriate position, refraining from advocacy is unlikely to represent a neutral position. Rather, such a refrain is typically implicit, but powerful, support for the policy backed by those with the most political power" (p. 1095).⁵ However, some broader dynamics in global politics have created new opportunities to remedy this situation.

A Discursive Shift: Same Exigence, New Constraints

In recent years, researchers have noted a shift in the behavior of stakeholders with vested interests in continued fossil extraction. Largely, they have shifted from discourses of climate change *denial* to discourses of climate *delay* (Lamb et al., 2020; Pringle & Robbins, 2022; Roper et al., 2016; Williams et al., 2022). This has been a gradual development in oil companies at least since the 1970's (Bonneuil et al., 2021) but it seems to be reaching its zenith these years. In delay discourses, climate science is not openly rejected and the

⁵ Sociologist and critic C. Wright Mills leveled this critique in relation to scientists and intellectuals already in the 1950s. See for instance *The Causes of World War Three* (1958), where Mills accuses scientists of mindless participation in the "Science Machine", drifting along with the warmongering elite's destructive inclinations: "Scientists become subordinated parts of the Science Machines of overdeveloped nations; these machines have become essential parts of the apparatus of war; that apparatus is now among the prime causes of war; without scientists it could not be developed and maintained. Thus do scientists become helpful and indispensable technicians of the thrust toward war" (1958, pp. 130–131).

existence of anthropogenic climate change is not denied as such. Instead, arguments for mitigation efforts focus on everything but the need for halting fossil fuel extraction, agricultural regulation, etc. Emphasis is instead put on future technological innovation, the high cost of a green transformation, the free-rider problem concerning other actors and nations, etc. Most oil and gas corporations have embraced so-called greenwashing strategies (Nemes et al., 2022) where, for instance, the Paris Agreement is embraced in marketing campaigns and CSR guidelines and 'sustainable fuels' and other techno-fixes are conjured to square the contradictions of continuing the fossil economy (Rajak, 2020).

In his detailed account of how the powerful stakeholders reproducing and benefitting from the neoliberal consensus have managed to not only survive various crises but actually bolster their ideological hegemony in them, Philip Mirowski (2013) describes a "neoliberal playbook" that has been used in both climate and financial policy domains. In terms of the first, the neoliberals' three main strategies - climate denialism, support of carbon permit trading policies, and promotion of geoengineering – should not be seen as separated but are part of the same movement towards marketization of the biosphere: "The promotion of denialism buys time for the other two options; the financialization of carbon credits gets all the attention in the medium term, while appeals to geoengineering incubate in the wings as a techno-utopian deus ex machina to swoop down when the other options fail" (p. 337).⁶ In this bleak perspective, the gradual slide from global warming and science denial to greenwashing and delay discourses is less of a progressive turn of political society as a whole but is part of the playbook of those with everything to gain in the short and medium term from continued climate destruction. The terrain of the climate debate has moved, creating new political - and thus rhetorical - (im)balances that need to be accounted for by various actors who have a stake in climate mitigation as hardcore global warming deniers "are being replaced by other breeds of *deceivers* and *dissemblers*, namely, downplayers, deflectors, dividers, and doomers" (Mann, 2022, p. 45).

⁶ For further work on neoliberalism as a political project related to climate change and ecological destruction see Felli (2021) and Nordblad & Vettese (2022).

While this overall discursive shift ultimately serves the same functions for fossil capitalism as the denialist strategy did (providing the continued foundation for fossil fuel profits), it changes the context of climate change debate for scientists. In the well-known terms of Lloyd Bitzer's (1968) rhetorical situation, the exigence – the urgent need to push for political action to halt greenhouse gas emissions and other harmful emission practices - remains but the constraints have changed. As Sheila Jasanoff (2004, 1997, 2006) has shown, science and society co-produce each other on multiple levels as policy frameworks, scientific work and changes in the social and natural order collide and pose new challenges. Global warming and sustainability issues are of course no exception (Miller, 2004; Miller & Wyborn, 2020). The typical assumption that science and politics/activism are largely distinct areas of social activity might be too sharply, and too hastily, drawn as it misses the sense in which "[d]oing science merges ... into doing politics" (Jasanoff, 2006, p. 29). Ecological scientific fields are in fact a prime case for co-production. As agricultural ecology researchers Andrea Aeberhard and Stephan Rist (2009) point out in their study of coproduction of knowledge in the development of organic agriculture in Switzerland, such "co-production implies that problem solving strategies have to be based on a close interaction between scientists and other involved actors, whereby it overcomes the pitfalls of a one-dimensional and linear interconnection between science and society, which neglects to address concepts of complexity and plurality" (p. 1172). The co-production process is not limited to any one scientific discipline or societal arena; the non-linear close engagement of scientists and society is especially direly needed in a crisis spanning the entire Earth's populace, although in very different ways.

Although fossil executives and their neoliberal political allies have strategically intervened in this process with some success, they are not, and can never be, in complete control of this co-production dynamic. I argue that the move from the time-buying denialism to the greenwashing and geoengineering stages has freed up space for scientists to not merely defend the validity of their evidence but to more explicitly act on their "duty to warn" (Oreskes, 2020, p. 41) about climate and ecological catastrophes to come. To once again refer to Green, scientists can now bring, if not exactly guns, then more and longer knifes to the fight for climate justice.

The two scientific journal articles examined here provide two different lines of arguments in the context of this discursive shift. The arguments are directed first and

foremost not at the public but at their scientific peers and this article thus examines rhetorical expressions that "has to do with the efforts made by scientists to persuade one another" (Wander, 1976, p. 227). However, in both cases, the aims of the articles themselves concern also the wider public and policy-makers in their calls for non-violent civil disobedience and a moratorium on climate science respectively. Thus, I consider them to be rhetorical attempts to negotiate scientific *ethos* in light of a pervasive societal crisis (Pietrucci & Ceccarelli, 2019).

Scientific Journal Texts and Global Warming

In light of the developments described above, scientist activism of various sorts has increased in exposure and intensity, from the global March for Science demonstrations starting in 2017 (March For Science) to the more recent and more radical Scientist Rebellion Movement emerging from the larger climate justice movement Extinction Rebellion (Scientist Rebellion). News media have picked up on this development, especially in connection with the COP26 meeting in Glasgow in 2021 (Quackenbush, 2022), and, overall, there is a growing awareness that "environmental movements composed of activists identifying as scientists have multiplied across the world in recent years" (Gibon, 2023). However, parallel to this development in the public sphere, debates among scientific communities themselves are taking place on various fronts – one of these fronts being scientific journals. In texts categorized as commentaries, letters, policy briefs, and the like, scientists within climate and ecological disciplines and beyond debate the responsibility of scientists in a crisis that seems so closely tied to their own findings. There are numerous examples of such articles (e.g. Capstick et al., 2022; Gardner et al., 2021; Racimo et al., 2022) but I have chosen to focus on Glavovic, Smith, and White's call for a moratorium on climate research and Gardner and Bullock's call for survival ecology. I do so for several reasons.

Firstly, the articles appeared at approximately the same time within the discursive shift described above, both published in 2021. Secondly, the articles gained widespread attention compared to similar publications preceding them. Glavovic, Smith, and White wrote a popularized version for the Australian science communication site The Conversation (B. Glavovic et al., n.d.), and their call for a climate science moratorium has been discussed in news articles in more generalized media outlets (Quackenbush, 2022; Zhong, 2022). Gardner and Bullock's article has not gained the same public attention in

and of itself, but it is among the most viewed articles on Frontiers in Conservation Science's website (*Articles* | *Frontiers*, n.d.). Gardner is a specifically prolific voice in the scientist activist community (Kone, 2021). He is involved with Scientist Rebellion, and has been co-authoring several calls for radicalizing science (Gardner et al., 2021; Gardner & Wordley, 2019; Racimo et al., 2022).

Finally, and most importantly, I focus on these articles not mainly because of their immediate effects and the scope of their circulation but especially because of their analytical potential for rhetorical criticism of scientific texts. Charles Bazerman's extensive work on these conventionalized textual products help us understand why (Bazerman, 2010, 2022; Bazerman, 1988; Bazerman & Paradis, 1991). Specifically on the question of science and global warming, Bazerman (2010) points out the problem of the gap between scientific evidence and public action:

[S]cientific consensus, even government authorized adjudication of consensus, is not enough for concerted action. The knowledge needs to gain the belief and commitment of segments of the population and institutional groups who will have to cooperate with the action. This brings in another level of complication. (p. 455)

Different sets of genres have to come into play in order to effect policy action on global warming, especially since some actors intentionally disrupt the knowledge dissemination ideally creating the impetus for transformative sustainable policies: "If the knowledge produced in the genres of one activity system bears on the genres and deliberations of other activity systems, specific work is required to bring the knowledge of one into another" (p. 446). Both articles under examination here attempt to engage this diversity of systems in their use of the scientific journal article. As we shall see, they both embed their arguments in this specific genre – indeed, the primary scientific genre (Miller & Fahnestock, 2013, p. 2) – and in so doing perform certain salient social actions (Miller, 1984). Thus, I take the articles to be instructive artifacts for rhetorical analysis and criticism in so far as they invite peers in the scientific community to work across social spheres in their discussion of the role and responsibilities, the *ethos*, of climate and ecological scientists. In the following section, I outline the argumentation of each article in order to show this action-oriented utilization of the scientific journal article.

Emergency Arguments for Scientist Social Action

In Bruce C. Glavovic, Timothy F. Smith, and Iain White's "The tragedy of climate change science," published in *Climate and Development* in July 2021, the authors argue that due to perpetual lack of action on the climate agenda, the science-society contract, where science supplies the diagnosis and decision-makers supply the solutions, is now broken. That the scientific community continues to perform this diagnostic work while getting no reaction is, they argue, fundamentally tragic:

The tragedy of climate change science is that compelling evidence is gathered, fresh warnings issued, new institutions established and novel methodologies developed to redress the problems. Yet, greenhouse gas emissions and, other indicators of adverse climate change, and global change more broadly, rise year upon year (p. 1).

Governments agree on the validity of the science. Still, not nearly enough is being done to prevent climate calamity, and in some ways, effective climate change action is being countered by powerful political interests. The authors engage directly with politics at hand, saying that the election of Joe Biden in the US offers a glimmer of hope, that the IPCC reports have never been more unequivocal in their scientific evidence on anthropocentric climate impact, and that the COVID-19 pandemic "has provided a window of opportunity to restructure economies and budgets away from reliance on fossil fuels" (Ibid.). However, this hope might be deceptive – we have lived through similar conditions while still not doing enough. This global tragedy is unavoidably also "a tragedy of and for science, especially climate change science" (Ibid.). Different solutions have been attempted – namely international climate treatises such as the Kyoto Protocol and the Paris Agreement on the one hand, and various forms of social movement work and activism on the other. Yet, as they illustrate in their Figure 1 (p. 3), the continued undertaking of these activities runs parallel to the continued increase in greenhouse gas emissions. So why keep on doing the same? Glavovic, Smith, and White think scientists shouldn't: [G]iven the urgency and criticality of climate change, we argue the time has come for scientists to agree to a moratorium on climate change research as a means to first expose, then reconfigure, the broken science-society contract. (p. 1)

The authors' call for a science moratorium can thus, in a sense, be seen as a call for *in*action. This, however, does not make the call any less radical. More appropriately, it should be seen as a strategy akin to a boycott or a strike, in which abstaining from participation or the withdrawing of one's own labor is used as a means to put pressure on those in power. Thus, unlike previous calls within science to stop certain types of work – like the halt in technological research on gene modification (Berg, 1974; see also Ceccarelli, 2018) or some of the many writings on science's ties to development of weapon technology (Allen, 1970), where the results of the research undertaken are deemed potentially dangerous – it is not the *outcome* of climate science as such that the authors are concerned about. Rather, it is the *lack* of political outcome as a response *to* continued research. Therefore, we should not dismiss the call for a moratorium as a withdrawal from conflict: Refusal to perform a function deemed harmful or counterproductive should not be equated with inaction (Pezzullo, 201). Indeed, a moratorium on climate research is radical in the sense that scientists are putting themselves on the line by interrupting the very action upon which their livelihood depend.

Fundamentally, then, Glavovic, Smith, and White's (2021) argumentation follows a 'Goldilocks structure': They consider three courses of action for scientists (continued scientific 'business as usual', increased social scientific and advocacy work, and a moratorium for climate science) that "are either untenable or unpalatable" (p. 4). As the two roads already taken (business as usual and advocacy) have not had the desirable effects, "a moratorium offers the only real prospect for restoring the science-society contract" (Ibid.). Again, the moratorium is not framed as an opting out of public participation but is instead framed as "a new powerful possibility for scientific advocacy and a further means by which scientists can act in the public interest when all other avenues have failed" (p. 4). It is not altogether clear why this should be the most effective strategy, as the authors provide no explicit reason for this other than the untenability of the other two strategies. It is also not spelled out in what way the broken contract should be renegotiated. In fact,

the authors call for restoration, reconfiguration, *and* renegotiation, without offering a distinction between these.

Charlie Gardner and James Bullock's article argues for a very different approach. "In the Climate Emergency, Conservation Must Become Survival Ecology" was published in October 2021 as a policy brief article in *Frontiers in Conservation Science*. Gardner and Bullock start by reviewing some of the conservation literature as evidence of the horrid facts of the changing biosphere. This leads them to the somber premise that "it is now clear that climate change will be so severe as to threaten the survival of entire biomes and condemn many species to extinction regardless of any future conservation efforts" (p. 2). Thus, a new way of operating in their scientific field is direly needed:

If we are to persuade society to take conservation seriously, we must stop framing it as the altruistic quest to save other species from extinction, and instead present it as the selfish, pragmatic goal of sustaining the conditions for human civilisation and other life on Earth. ... In other words, we must dynamically maintain, restore and create ecosystems to allow the biosphere to evolve, adapt and change such that it maintains itself in all its complexity during a time of rapid biotic and abiotic change. We must move from biodiversity conservation to survival ecology. (2021, p. 2)

This move entails a shift in conservationist practice from reactiveness (futile and time-wasting attempts at maintaining current ecosystems) to proactiveness (finding ways to establish new ecosystems on the planet as it is and will become), and from advocacy (urging decision-makers to act in accordance with scientific findings through traditional channels) to activism (preferably in the form of non-violent civil disobedience). The authors recognize that advocacy attempts have been an integral part of the conservationist tradition but fault the theory of change it is usually based upon. Instead, Gardner and Bullock subscribe to the theory of change that Extinction Rebellion also swears to, following social scientists Erica Chenoweth and Maria Stephan's (2011) work, as well as the writings of social movement figure Roger Hallam (2019). This must be part of the survival ecology approach in order for it to be meaningful at all according to the authors: "[Shifting from reactive to proactive conservation efforts] will be insufficient unless we also reconsider how conservation seeks to influence political and economic decision-making,

and wider society" (Gardner & Bullock, 2021, p. 3). Activism is then here not understood as an 'add on' activity for scientists that they can do 'on the side' but should be part of the full range of scientific work practices for conservation biologists.

Gardner and Bullock's suggestions will likely seem exceedingly radical – both in their pessimism about the state of nature systems and in the proposed new directions for the scientific community – to most conservationist and other scientist peers encountering the piece. The authors acknowledge this when remarking "[s]ome of our suggestions may be controversial," and that they "seek only to stimulate an urgently-needed debate," while remind the reader that survival ecology "is a way of thinking about conservation rather than a plan or toolbox" (p. 5). Survival ecologists are thus still able to make use of the expertise built up through the traditional conservation paradigm. Although controversial, it is difficult not to read the article as driven by genuine concern for the subject matter of their research area: life on earth as such. If one accepts the research-backed premises that "the prospects for preventing further extinctions become ever more remote" and that "[a]ll major ecosystems will undergo major transformation" (p. 1), it becomes more reasonable (even if still uncomfortable) to consider drastic measures to reorient conservation science practices.

Gardner and Bullock evoke the meaning of the concept of an emergency, a word also used about the state of our planet by Glavovic, Smith, and White (2021, p. 1), and which has been widespread in climate movements for at least a decade: "An emergency is a critical situation requiring our immediate attention; in an emergency, we stop what we were doing and refocus on the urgent task at hand" (Gardner & Bullock, 2021, p. 1).⁷ Interestingly, then, Gardner and Bullock as well as Glavovic, Smith, and White call for a stop to current activities, even though they each suggest dealing with this emergency as scientists in very

⁷ David Spratt and Philip Sutton's (2009) early popularization of the climate emergency frame makes a similar move although adding an analogy: "Just as in hospitals, where 'code red' denotes a patient who needs advanced life-support, the phrase signals an emergency: an alarm that rings now, for all life on this fragile planet" (p. 2). Gardner and Bullock (2021) use a similarly framed emergency metaphor when arguing for the need for proactive survival ecologist approaches: "While such 'experimentation' does represent a leap in the dark to some extent, when one is in a burning building the only choice is to leap" (p. 3).

different fashion. In fact, one can read the two articles 'up against' each other's suggestions. First, Glavovic, Smith, and White (2021): "Other strategies aiming to address the failing science-society contract have focused on advocacy and activism. ... Yet, regardless of the strategy adopted, governments have not yet heeded the calls for urgent climate action" (p. 2). Then, Gardner and Bullock's (2021) reply: "[N]othing conservationists have tried so far has worked, but it would be foolish to stop trying new approaches in an emergency context" (p. 3). This new approach entails, for Gardner and Bullock, the activist work that Glavovic, Smith, and White consider a failed strategy.

Although these articles call for different responses to climate and ecological emergency from the scientific community, they are united in advocating radical interventions in scientific status quo employing a rhetoric of urgency directed at their peers. Following the insights from Carolyn Miller's (1984) groundbreaking conception of genre as social action, one can say that these scientists use the genre of the scientific journal article to perform the social action of inspiring social action of a radical sort within their community. Genre scholar Amy Devitt (2021) builds on the rhetorical genre studies approach of Miller and others by pointing out that "[g]enres operate not just as social action but for social action" (p. 18). That is, genre is not just a silent former of preestablished formations for what kinds of social action can be performed in a given context but can also be used consciously, for instance by being mindful of, resisting, revising, or creating genres. Using the climate debate as an example, Devitt argues that the "revised social action of scholarly articles ... offers new possibilities for transformative social action" (p. 28). It is, then, often in the frictions between traditional employment of known genres and some new or challenging elements used within the genre frame that transformation become possible, although the process is likely to be unruly and hard to master.

As I have shown above, Glavovic, Smith, and White as well as Gardner and Bullock seem to be engaging quite intentionally in new possibilities for transformative social actions through their uptake of the journal article. They publish in journals in their own fields, refer to relevant research to back up their claims, use figures to illustrate their points, divide their text into sections (Abstract, Introduction, Conclusion, etc.). While doing all this, they also employ an emergency rhetoric to argue for change *in* these very fields; they argue *for* social action to be undertaken by their colleagues. In this way, they utilize "expertise as a genre" for social action in a "negotiation of power in particular cultural spheres," (Hartelius, 2011, p. 30) here in the technical spheres of climate and ecological science.

Still, there are decisive differences in terms of the two articles' way of using the journal article for social action that cannot be reduced to the difference in opinion about what scientists should do. A close inspection of textual elements help us see important differences in their strategies that may affect the success of transformational work through the genre. In the following section, I flesh out this difference by looking at the central rhetorical figures in the texts. Jeanne Fahnestock's (2002) brilliant work on *Rhetorical Figures in Science* is instructive in this regard.

Publish and Perish: The Tragic *Ploche* of the Climate Science Moratorium Call

As with any rhetorical text, many figures appear throughout both articles, from *litotes* – "no non-radical choices remain" (Gardner & Bullock, 2021, p. 3) – to *parataxis* – "We carry on. Deliver more science. Collect more evidence of deleterious impacts" (Glavovic et al., 2021, p. 2). This section, however, focus on what I consider to be the guiding figures of the two texts: *ploche* and *antithesis*.

In the very first lines of "The tragedy of climate change science," a central premise of the authors' argumentation is cemented: "The science-society contract is broken." (p. 1). This is the first sentence of the abstract as well as the introduction. In fact, this phrase appears 12 times in total, with only occasional and slight variations in wording. Taking it page by page of the short article, we have "The science-society contract is broken. … the broken science-society contract. … The science-society contract is broken. … the broken science-society contract," on page 1; "the science-society contract is irrevocably broken. … It is a breach of the science-society contract. … the failing science-society contract … the science-society contract is broken. … the science-society contract is broken," on page 2; and "the broken science-society contract. … moratorium offers the only real prospect for restoring the science-society contract," on page 4. (There are no occurrences on page 3, which is not surprising since Figure 1 takes up most of the space on this page.) It seems safe to say that a figure of repetition is at play here. Repetitions are found in many, if not most, scientific texts, and Fahnestock (2002) devotes the last chapter of *Rhetorical Figures in Science* to the repetition figures *ploche* and *polyptoton*. Scientific texts routinely employ these figures in order to emphasize key points, bring salience to desired interpretations of concepts, and create identification between ideas. "The tragedy of climate change science" is, as we have just seen, heavily loaded with *ploche*, "repetitions that do not occur in structurally significant slots" (p. 158). That is, though the broken science-society contract continually reappears, it does not possess the 'musicality' of figures like *anaphora* or *antimetabole* who are defined by non-random structures. What I here choose to call a lack of musicality does not mean that the *ploche* is 'bad language', or inefficient in some sense, or to be avoided as such; after all, we all repeat words and phrases and, as stated, the *ploche* often serves strategic functions.

The moratorium call's repeated referral to the broken science-society contract that must be reconfigured or reconstructed is easily read – perhaps fittingly, considering the theme of the text – as a sort of structural breakdown. The text as a whole is even nearing *epanalepsis*, the repetition of the same structure at the opening and ending; it starts with "The science-society contract is broken" (Glavovic et al., 2021, p. 1) in abstract and introduction while ending on "a moratorium offers the only real prospect for restoring the science-society contract" (p. 4) as the second last sentence. In fact, the abstract text as a whole *is* an *epanalepsis*. The insistent repetition of this formulation is what makes it a *ploche* rather than some other main figure of repetition like *antanaclasis* (the form of a structure varies and changes in the course of its repetition). Though the specific formulations do vary minimally (on a few occasions), the central structures of the *contract* and *science-society/science and society* retain their basic form and occupy the same position in terms of the argument structure in all cases.

However, some of the advantageous subtlety of the *ploche* figure in scientific argumentation is missing from Glavovic, Smith, and White's text. Their repetition of the broken contract is quite dissimilar to "the subtler repetitions that declare identity in reference or the interconnectedness among phenomena," as in for example Charles Darwin's pervasive use of the *ploche* (Fahnestock, 2002, p. 161). It is often this function of bringing salience to certain phenomena and connecting ideas that the general repetition of the *ploche* possesses, while still escaping similarity to an artificial construction. Instead,

the authors' use of *ploche* feels more like reoccurring points of restriction in the course of the short text. In this sense, it performs the very frustration that the breakdown of the contract instills for the authors: Scientists have reached an end point, and no matter which way they turn, they inevitably find themselves that same dead end: the broken science-society contract. From one perspective, this is an ingenious use of the figure in a scientific text in as far as it reflects the sense of futility that creates the need for a moratorium in the first place. However, as I will show, from a co-production perspective, Glavovic, Smith, and White's *plochistic* rhetoric inevitably runs up against its own limits.

Publish or Perish: Antithetical Movements of Survival Ecology

Although *ploche* also appears in "In the Climate Emergency: Conservation Biology Must Become Survival Ecology" (as it will in any scientific text of substantial length), it is another figure that dominate the text's argumentation: the *antithesis*, "a verbal structure that places contrasted or opposed terms in parallel or balanced cola or phrases" (p. 46). When considered in its broadest sense, we find that *antithesis* is no less pervasive than the often unnoticeable figures of repetition; concepts are contrasted all the time in both daily language and in scientific discourse because, as Fahnestock points out, antithesis strategically uses the universal trait of noticing contrasts and contradictions in life: "An antithesis as a figure of speech at the sentence level builds on these powerful natural pairs, the use of one in the first half of the figure creating the expectation of its verbal partner in the second half" (p. 47). As Fahnestock notes, in the Ad Herennium "antithesis [contentio] appears both as a figure of diction and as a figure of thought," (p. 8) and there is no single clear definition of antithesis across the classical texts. We can choose to read this diverse categorization of the antithesis as merely a mistake in the 'messy' antique lists of rhetorical figures. However, we can also view it as a strength of this particular figure: In moving between opposites on the textual level, it also seeks to move its audience's thoughts from one place to another.

The title of Gardner and Bullock's (2021) article's is an antithetical construction but the reader might not recognize this immediately when encountering the text for the first time. In fact, conservation does not intuitively seem to be opposite to survival, and biology seems more connected to ecology than rival to it. However, when reading the text, it becomes apparent that these are to be considered contrasting paradigms. Consider this part of the article's abstract: "Rather than seeking to maintain a world which will no longer exist, survival ecology acknowledges unavoidable change and seeks to shape the world that will: it looks to the future, not the past" (p. 1). From this, we learn that for the authors, conservation biology equals maintaining a world which will no longer exist and that survival is its opposite because it seeks to shape the world that will. This antithetical pair of "will no longer"/"will" is then doubled down on by the *antithesis* "it looks to the future, not the past". This move is made throughout the text. There are subtle versions, as when survival ecology is defined as "a way of thinking about conservation rather than a plan or toolbox," (p. 5) where the thought/action distinction is invoked, or in the following passage playing on the altruism/selfishness contrast:

If we are to persuade society to take conservation seriously, we must stop framing it as the altruistic quest to save other species from extinction, and instead present it as the selfish, pragmatic goal of sustaining the conditions for human civilisation and other life on Earth. (p. 2)

However, more obvious antitheses are present. Gardner and Bullock's Figure 1 (p. 4) visualizes the five areas of transformation defining the movement from conservation biology to survival ecology. To take it from the top: In terms of "Objective," conservation scientists should move from "Maintaining the diversity of life" to "Maintaining the conditions for complex life" through a "short term"/"long term" antithesis; in terms of "Approach," scientists should move from "Reactive" to "Proactive" (an anthesis of direct contraries) through the "prevent or reverse"/"shape" structure; in terms of "Prioritisation," we move from "Prioritising present diversity" to "Prioritising future function"; in terms of "Key actions," conservation's "ecosystem restoration" is set up against survival ecology's "assisted colonisation"; and, finally, in terms of "Theory of change," "Impact through advocacy" is pinned against its challenger "Impact through activism". This visual figure setting up the textual rhetorical figures encapsulate the overall antithetical structure of argument in Gardner and Bullock's emergency response to ecological crisis. In fact, the figures of both articles are highly instructive visual and textual clues to the difference in guiding rhetorical figures. Glavovic, Smith, and White's (2021) Figure 1 (p. 3) illustrates how IPCC report after IPCC report, activist after activist, policy resolution after policy resolution

alongside ever rising emissions is a *ploche* installing in the reader the frustration of repetition without transition. Gardner and Bullock's figure, as discussed above, also has arrows moving left to right, but they are going somewhere else than towards tragic failure of science – they are pointing to a new way for science by way of *antithesis*.

Where does this leave us? Following my previously established argument that climate and ecological scientists find themselves in a new rhetorical situation in terms of their relation to advocacy, alarmism, and activism, which allows the use of scientific genres *for* social action to participate in the co-production of science and society, I argue that Gardner and Bullock's antithetical use of the journal article possesses a flexibility and directedness that Glavovic, Smith, and White's *ploche* lacks. In other words, while the moratorium call's *ploche* does a good job of expressing scientist frustration, it does not go much further, just as the moratorium cannot do much more than be instated.

Gardner and Bullock may have some historically determined advantages in orienting their field towards new forms of action. Being positioned within conservation science, Gardner and Bullock's article is situated in a field with a built-in ethical component. In a famous 1985 essay in BioScience, founder of the Society for Conservation Biology, Michael Soulé (1985), emphasizes the ethical implications of conservation work as such, and named its family of scientific areas "crisis-oriented disciplines" (p. 727, see also Cox, 2007). The foundational position as a crisis discipline might make it easier for conservation scientists to write and publish journal commentary arguing for radical forms of science advocacy and activism that go beyond simply stopping their work. Thus, Gardner and Bullock are able to take political dimensions into account in the conservation science field itself, contrary to Glavovic, Smith, and White, even as they refer to political developments and events on the global stage (the election of Biden, the COVID lockdowns, the many ineffective political climate agreements, etc.) to a larger degree. Gardner and Bullock's (2021) antithetical rhetoric makes them co-productionists; they more or less say so themselves when they note that "existing frameworks do not address the question of how conservation itself needs to change, while survival ecology recognises the need for new philosophies and approaches" (p. 3). (Note the antithesis of "exiting frameworks"/"new philosophies and approaches".) Gardner and Bullock do not cite Jasanoff, but, ironically, Glavovic, Smith, and White (2021) do in their argument that continuation of climate change science as usual "continues the naive demarcation between the practice of science and the

politics of policy-making (e.g. Jasanoff, 2004)" (p. 2). However, the *ploches* of "The tragedy of climate science" itself drives a hard demarcation between science and politics that reifies science and leaves it waiting for changes in politics.

Conclusion

It is still early in terms of telling what kinds of effects the calls for a moratorium and for survival ecology will have on the practices of other scientists responding to the climate and ecological crisis. Some of the immediate reception provide a mixed picture. For instance, in 2022 space scientist Mauricio Misquero from the University of Rome Tor Vergata decided to halt his research to act on the climate crisis. "... I decide to stop working to feed this inertia and this illusion [of using space technologies to avoid or escape climate breakdown]. Instead, I will be devoted full time to push in the direction of change," Miguero writes in an open letter, although without citing Glavovic, Smith, and White (This Is an Act of Disobedience - Scientist Rebellion_, n.d.). A Washington Post article from 2022 points to the moratorium article as part of a broader activism 'boom' within the scientific community, however stating that "its call for a strike did not win many converts" (Quackenbush, 2022). In terms of Gardner and Bullock's call for a turn to survival ecology, it remains difficult to separate from especially Gardner's general engagement in persuading his peers to pick up civil disobedience. Taking Misquero as an example once more (although a space scientist, not a conservation biologist), he does respond positively to the general call for civil disobedience from Scientist Rebellion in which Gardner is a prominent voice. The Scientist Rebellion movement has grown to become a larger network of scientist activism and the discussions about responses to climate and ecological emergency within the scientific community are part of this growth. It is safe to say that the article appears in the midst of an ongoing debate within conservation science, and within science more broadly, which will likely continue and develop in the years to come (DellaSala, 2021).

In a stroke of coincidence, I have co-authored an article contributing to this very discussion (Racimo et al., 2022). A life scientist whom I know from academic and activist circles, and who is a member of the Nordic version of the Scientist Rebellion movement, asked me whether I could contribute to their article arguing for life scientists to change communication tactics in the climate and ecological emergency. Always looking for ways to help dissemination efforts and work across disciplinary boundaries, I contributed to the

part of the article reflecting on scientist activism in a historical perspective as well as to developing the argument, also made above, that activism need not damage the credibility of scientists. As it happened, Gardner became part of the article writing process later on, and we are now both listed as co-authors on this publication. This happened simultaneously with the work on *this* article, showing what kind of surprising opportunities the lively debate on science, activism, and climate can result in.

However, this study is neither a reception study of immediate rhetorical effects, nor a methodological discussion of participation in the very activism that I study as a rhetorical critic.⁸ Instead, I have attempted to employ the analytical tools of rhetoric to examine scientific texts in order to evaluate the transformative potential that these specific cases hold. I have argued that this potential is more fully developed in the co-productionist antithetical argumentation in "In the Climate Emergency, Conservation Must Become Survival Ecology" than in the *ploches* of "The tragedy of climate change science". As such, Gardner and Bullock are more successful in employing the scientific journal article genre for social action.

It is often a motivation for the field of environmental humanities – including its subfield of environmental rhetoric – that we can do something that the 'hard sciencens' cannot. A widespread idea of the *raeson d'etre* of Environmental Humanities is that "[s]cience does not necessarily ... make us or help us to change direction," because while

the sciences may observe and analyze change, they are not organized or structured to create social policy and influence humans to change values and opinions. The human sciences ... are, on the other hand, a fertile and largely untapped resource of insight into human motivation, creativity, and agency. (Holm et al., 2015, pp. 980–981)

While I strongly agree that the human sciences, including rhetorical studies, can and should help us understand and act on the climate emergency, I hope to have used my

⁸ I deal with the latter question elsewhere in my dissertation work.

expertise within this field to complicate the assumptions about climate *science* as a necessarily static and information-generating academic enterprise. Climate and ecological scientists can and do move beyond observation and analysis. Environmental rhetoric and the rhetoric of science can aid them in this effort – and scientists surely also aid rhetoricians in understanding climate politics and its urgencies.

One thing that neither Gardner and Bullock nor Glavovic, Smith, and White touch upon is the very structure of academic and scientific publishing today. Different fields and disciplines have different publication traditions and practices. However, the 'publish or perish' paradigm – roughly, the idea that the quality, or 'impact', of a researcher's work can be measured quantitatively in terms of publication output – might be as unsustainable a practice as so many other large-scale industry in the neoliberal Anthropocene. This should also be part of discussions about scientists' role and responsibility in terms of the struggle for climate justice: Is the publication ecology sustainable? Although Glavovic, Smith, and White point to the unsustainability of continued publishing, they do so not because of the scientific publication ecology, but because they feel that the proper political responses are not happening on the background of this ecology's current output. Are Glavovic, Smith, and White perhaps right in suggesting that we leave *this* kind of publication work – and should we start reflecting on what a turn to 'survival *publishing*' might mean? The scientific publishing ecosystem in which scientific journals operate needs attention and care as well. Perhaps a reconfiguration of the science-science contract?

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Scientists Rebelling at the Climate Ministry: Unrestful Scientific Ethos at Scientist Rebellion's Teach-in Demonstration

<u>Abstract:</u> Scientists are increasingly turning to activism as a means to call for political action on the climate agenda. This article examines such a case: the first Nordic civil disobedience action carried out by the scientist social movement Scientist Rebellion in front of the Climate Ministry in Copenhagen in 2021. In my rhetorical critique, I focus on the media coverage of the demonstration to examine how scientific ethos is negotiated when merging with activist practice in public space. Through a reading of the scientist activists' operationalization of place and movement rhetoric, I argue that it would be helpful to rethink dominant perspectives on scientific ethos in the climate and ecological crisis. The intersection between science and social movements highlights the need to understand ethos as unrestful rather than as a gradual and stable process of construction. Finally, I argue that a rhetorical-humanist approach to social movements' potentialities to change society can serve as a nuancing perspective to the more deterministic theories of change like the ones Scientist Rebellion works with.

Keywords: Scientist activism, ethos, climate activism, social movement rhetoric, rhetoric of science

Planetary and Epistemic Crises

Conflicts around knowledge and climate in recent years pose new and radical challenges to those of us working in scientific institutions. The warnings of the IPCC reports – perhaps the most scientifically substantiated reports ever – are increasingly severe for each edition and by now justify the turn from talking about a climate *crisis* to talking about a climate *emergency* (IPCC, 2021; Spratt & Sutton, 2009). The consequences of an impending climate and biodiversity collapse are thus more foregrounded than ever in the modern citizen and knowledge worker's consciousness than ever before (Morton, 2010). Global warming and the destabilizing changes in our climate that follow have been described as a "hyperobject" (Morton, 2013), a "wicked problem" (Incropera, 2015), and even as a "Super Wicked Problem" (Levin et al., 2009). At the same time, disregard of scientific evidence and warnings of experts are occasionally referred to as "the post-fact society" (Baker & Oreskes, 2017; Manjoo, 2008; McIntyre, 2018) or even as "the death of truth" (Kakutani, 2018). The

impression of general erosion of truth and knowledge can hardly be said to be a result of a lack of scientific expertise – the quantitative level of this expertise is at its most monumental stage in the history of humanity (Shaver, 2018). The contemporary era referred to in- and outside academic communities as the Anthropocene – the planetary epoch in which human activities are central in defining the condition and development of the biosphere – places demands upon science and its purpose and credibility. The recent translation into Danish of the philosopher Michel Serres' essay *Times of Crisis* (2014) is therefore timely because it binds together these eco- and knowledge crises: Serres describes the global crisis condition as "a strange, difficult to manage loop. Indeed, we depend on a world for whose production we are partly responsible" (p. 28) which "requires a new science, new behaviors and another society" (p. 48).⁹ The crisis, as so often, screams for renewal. Thus, knowledge crisis and climate emergency coalesce in a critical global moment, not least for researchers and scientists: How to deal with the fact that evidence is pointing in one direction but societal development is moving in another? This results in an ethical challenge in the fundamental sense of this word: What ought we to *do*?

This article focusses on researchers approaching this critical moment in a handson, activist manner and on the activist encounter between researchers and the wider public. The Nordic Scientist Rebellion movement's civil disobedient direct action in front of the Climate Ministry in October 2021 was the first of its kind on Danish soil. Here, researchers based at Danish and Swedish universities gathered to demonstrate against what they regard as the Danish government's lack of climate action on climate issues. Their approach was a tech-in demonstration, that is, a temporary take-over and repurposing of a public place for teaching. The Scientist Rebellion demonstrators lectured in front of the crowd about the climate crisis from the vantage point of different disciplines and among

⁹ I here refer to Anne-Marie Feenberg-Dibon's 2014 translation of Serres' essay, originally published in 2009. In the published Danish version of this text, I refer to Sebastian Egholm Lund's translation (Serres, 2022).

other things advocated that the recommendations of the People's Climate Assembly be made politically binding.¹⁰

This article aims to critically examine scientific ethos; specifically how scientific ethos relates to place and the renegotiation that becomes possible in the movement of researchers and scientists from one place to another - from a scientific-institutional to a public-political setting. First, I position the article within the fields of climate and environmental rhetoric and the rhetoric of science. I then turn to an analysis of the media sources reporting Scientist Rebellion's teach-in with a specific focus on how an opening for discussion, renegotiation, and redefinition of scientific ethos in activist practice is created. Especially place and movement are foregrounded as productive aspects of the rhetorical renegotiation of scientific ethos in the climate crisis. The analysis leads to the suggestion that ethos studies within the rhetoric of science field should be expanded with a concept of ethos centering unrest and fracture rather than the retention of structures and norms. When Scientist Rebellion moves the classroom outside to confront power, it is not only an attention-grapping appeal to climate action; it is also a redefinition of who and what a scientist can be and what role they can play in a societal crisis. In closing, I conclude that a rhetorically informed approach to the work of scientist activist movements improves our ability to navigate complex and instable relations between science and society as opposed to more dogmatic, but widespread, theories of change within social movements.

Climate Rhetoric, Rhetoric of Science, and Social Movements

That scientists, researchers, and scholars engage in various forms of activism and interfere in political issues generally is no novel phenomenon (Frickel, 2004; Kuznick, 2019; Moore, 2008). Nevertheless, it seems that the connection between climate and environmental sciences' disclosure of the devastating challenges facing civilization has inspired in many

¹⁰ I was not present at the teach-in myself but had a minor role in its preparations in the year leading up to it. This article's focus and scope does not allow for a deeper discussion of my role as participating critical rhetorician *in absentia* here, but the rhetorical-critical and methodological problematics surrounding this are discussed elsewhere in my dissertation.

scientists a sense of a moral and political imperative. Scientists are increasingly writing open letters with thousands of signatories (Ripple et al., 2020), disseminating their knowledge about the seriousness of the crisis to lay audiences (Thunberg et al., 2022), publish warnings and calls for action in articles and commentaries in scientific journals (Capstick et al., 2022; Gardner & Bullock, 2021; Glavovic et al., 2021),¹¹ and participate in the millions in internationally coordinated protests against the lack of political will to 'listen to the science' (March For Science - Advocating Science Not Silence!, n.d.). Nonviolent civil disobedience actions like Scientist Rebellion's can be seen as one of the most radical expressions of this tendency towards increased societal engagement from the scientific community in matters of climate politics. In spite of a few exceptions, ¹² this development is hitherto underexplored in rhetorical scholarship.

It is a central motivation for the broader 'environmental humanities' field that we need new knowledge producing relations to deal with the paramount tasks imposed by climate problematics. ¹³ The disciplinarities of the humanities are increasingly turned toward climate and sustainability questions hitherto considered the domain of the natural sciences in order to understand what kind of imaginaries are driving climate destruction, for example the continued extraction and combustion of fossil fuels (Stoddard et al., 2021, p. 673). Maria Wolrath Söderberg (2020) has recently provided a useful meta-critical oversight of contemporary rhetorical scholarship's possible position in and contribution to this broad (inter)disciplinary field. Drawing on Phaedra Pezzullo's (2016) account of the historically marginalized position of environmental rhetoric in rhetorical criticism, Söderberg argues that "there is a need and potential for Nordic rhetorical scholarship to

¹¹ I have myself co-authored such a call to action with a group of life scientists. See Racimo et al. (2022).

¹² For an example of one of the few accounts of these rhetorical phenomena, mainly March for Science, see Collin Syfert's PhD dissertation from 2019.

¹³ A thorough recent introduction to the field can be found in (Hubbell & Ryan, 2021). I consider environmental humanities to encompass the broad sphere of the human sciences' examination of climate and environmental matters. However, occasionally other terms are used to refer to similar humanist fields. One example is the term "energy humanities", which more specifically focusses on the relations between modern humanity and the consumption of fossil fuels (Kujundžić & Mišík, 2020; Szeman & Boyer, 2017).

examine sustainability issues in our specific contexts," (p. 24, my translation) and point to three areas specifically: the rhetoric of climate and environmental science, the topology of sustainability discourses, and studies of pathos and ethos in the climate debate.

Studying ethos in the climate debate is an obvious place to start in rhetorical criticism of scientist activism in the climate struggle. Here, there is a need for the sprouting field of climate and environmental rhetoric to connect with the more established field working with social movement and activist rhetoric, and with the rhetoric of science. Dana Cloud (2018) points to the rhetoric of science specifically as a disciplinary field ideally positioned to intervene in the democratic problems facing us today, epistemic as well as planetary. Rhetoric of science acknowledges that our reality is perspectival – that scientific work and public rhetoric in general is necessarily filtered through *terministic screens* (Ceccarelli, 2001, pp. 3–4) – and at the same time take seriously the material conditions that science examines and provides valuable insights on:

Work in the rhetoric of science is a resource for a rhetorical realism, one that is not naïve about our capacity to represent anything like an objective truth while remaining committed to the idea that, in spite of the necessity of rhetorical mediation, there are better and worse scientific claims and better and worse regimes of knowledge. (Cloud, 2018, p. 27)

Especially regarding a problem as all-enveloping and scientifically well-documented as the climate crisis, a rhetorical-theoretical perspective where we recognize the epistemic value of the work of climate science alongside critiques of social and political reality is useful (Malm, 2018). The breakdown of the conditions for life is thus pulling us toward a more 'hard' realism, without forcing us to ascribe to naïve essentialism (Bhaskar, 2008). The rhetoric of science thereby becomes a tool for examining the affective-material spaces that science works in and between – without therefore giving way to rejections of the distinction between well-founded, persuasive research on the one hand and pseudoscience and ideologically blind 'scientism' on the other (Schaefer, 2022).

Social movements are rhetorical phenomena that both negotiate identities and change political reality (Cox & Foust, 2009). Instead of assuming that social movements either create this reality or that reality determine social movements in the first place, a

rhetoric of science perspective on the rhetoric of social movements in the climate crisis can provide us with a third critical perspective in the form of Cloud's (2018) "rhetorical realist position that acknowledges the partiality of knowledge and the complexities of representation without giving up the capacity for political judgment that can guide action for social change" (p. 15).

Both rhetoric of science and climate and environmental rhetoric are still in their early stages in a Nordic context compared to the American ditto that Cloud's work is part of.¹⁴ All the more reason to get our hands dirty in the reality of the current climate crisis that threatens the planetary conditions supporting life and therefore also the conditions supporting research as such.

Scientific Ethos

My rhetorical analysis and critique of the media coverage of Scientist Rebellion's teach-in is positioned both within the rhetoric of science field and in the treatment of ethos in the climate debate that Söderberg calls attention to as two central focus areas for rhetorical criticism. I understand an examination and critique of scientific ethos as an examination of "the language choices of rhetors" where the purpose is "to better understand how character is developed as a means of persuasion in arguments about science and scientists" (Ceccarelli, 2020, p. 16), that is, in line with main currents within the rhetoric of science field as Leah Ceccarelli presents it. Here, scientific ethos is not an inherent characteristic of scientists or a steady and unchangeable value to which scientists can more or less adhere. Rather, a rhetoric of science conception of scientific ethos will emphasize the operationalization of character traits as means of persuasion in practice. This creates the foundation for a continuous negotiation of the role of science in the conversation within and between scientific and public spheres (Walsh, 2013, p. 4). Whereas studies of scientific

¹⁴ This of course does not mean that there has not already been important work done in these fields. I have already mentioned Söderberg's work, and among others, Esben Bjerggaard Nielsen has worked extensively with climate rhetoric. Rhetoric of science scholarship and dissemination also exist on this latitude. Se for instance Jensen (2012).
norms and values in the history or sociology of science have a tendency to look at how, for example, objectivity becomes an "ideal and ethos [that] are gradually built up and bodied out by thousands of concrete actions …" (Daston & Galison, 2010, p. 52), a rhetoric of science perspective is especially suited to shed light on the development of scientific ethos as it appears in the ongoing exchanges about science in public debate. Whereas Lorraine Daston and Peter Galison's deservedly renowned work with the ideal of objectivity examines the development of scientific artefacts themselves in a certain historical period, rhetoric of science can productively examine how different ideas about science are played out against each other in contemporary public debate. In a broader perspective, these two approaches supplement each other constructively.

I look at the teach-in through media sources because the mediation and circulation of the scientist activists' bodies in the streets is a fundamental function of "unruly" bodily argumentation such as demonstrations and blockades (DeLuca, 1999a, p. 10). Furthermore, there is a deeper perspective in the scientific ethos as it is negotiated rhetorically in public: The scientists enter public space and create a "critical interruption" in the political process (Pezzullo, 2001). Thus, radical protest actions are not only a means to generate attention around a cause but also present an attempt to intervene in deeply culturally ingrained logics. Kevin DeLuca (1999b) describes how environmental activists in the Earth First! movement challenged ideological imaginaries about the separation of humans and nature in their actions, for example by burying themselves in the soil with just their head free in order to obstruct logging companies' deforestation. Actions like these become synecdochic expressions of the inseparability of people and nature. I will add that these practices not only challenge the nature/human dichotomies of industrial capitalism but also what kinds of actions that are legitimate for citizens to perform in opposition to these dichotomies – and, in the case of scientist activism, what actions scientists and researchers legitimately can and should perform. The "cracks and openings for resistance, alternative readings, aberrant sense-making" (p. 119) that the rhetoric of radical environmental and climate movements invites with their "mind bombs" in the news stream are an opening in and rereading of ethos constructions and appeals. Scientist Rebellion's teach-in at the Climate Ministry is a prime example of this dynamic where especially the strategic movements between places generate questions about scientific ethos in public.

The article's analysis unfolds in three stages. First, I look at the media sources' focus on scientific ethos in relation to the act of protest. Second, I analyze the sources' focus on place and movement. Finally, these analytical perspectives are synthetized in an account of how spatial fractures underlie wider discussions of the ethos in social movements consisting of scientists.

Rebellion, Teaching, and Scientific Ethos in the Street

Scientist Rebellion's teach-in was covered by a broad range of Danish and Swedish media in text, sound, and pictures. All these news media artefacts pose questions about scientific ethos in different ways, often as the primary framing of the story and in some cases as the sole angle. An example of the latter is a radio interview in P1 Morgen with demonstration participant and PhD student in political science Mads Ejsing. Hosts Anders Bech-Jessen and Julie Hornbek Toft inquire as to his role repeatedly. They want to know: "Are you there as a researcher, as an expert, or are you there as a private person? Who *are* you?" ("P1 Morgen," 2021, 01:21:20).¹⁵ They also ask Ejsing if it is "dangerous" to mix the roles (01:22:06), and whether it puts a "label" on him "that makes it difficult for you to communicate what you actually want to tell people?" (01:23:59). The question about the role of the researcher is repeated in other media sources: "*But are you here as researchers or as private persons?*" (Trolle, 2021); "But what about the researchers, are they here as scientists or private persons, and where is the line between the two?" (Viemose, 2021); "Can one be a climate activist and still be an independent researcher?" (Knudsen, 2021).

The researchers themselves are not unambiguous in their answers to all these questions about their professional/public role and credibility. Some researchers, like Laura Horn from RUC, express their sense of fundamentally not belonging in the street but being obligated to be there because of the extraordinary climate crisis: "I would actually rather be with my students, but when politicians are not listening to the researchers, we have to take to the streets" (Trolle, 2021). Others are more straightforward about their obligation

¹⁵ All quotes in Danish and Swedish from the media sources have been translated into English by me for the purposes of this dissertation.

to engage in activism, for example Aitzskoa de Lapuente from Lund University: "I believe that it's time for scientists to move from their traditional ways of lobbying and influencing governments to a more direct action" (Larsson, 2021, 00:13). Still others are more hesitant. Mads Ejsing is a good example of this nuance-seeking and ambivalent perspective. He underscores early on in the P1 Morgen (2021) interview that he has "not come here as a spokesperson for this event" (01:20:35) but merely as a participating researcher. He also refers to himself as participating as a private person, although shortly thereafter, he says:

And I do understand why you're asking this question, well, there are indeed questions like this you ask yourself before saying yes to go out and do this, right. And especially in light of recent discussions in the press around activist research and such, right. And I would say that I think that to be completely honest, I think that it is difficult to separate the two completely when working with a topic such as climate change, when you sit and read reports every single day about these things, so it's hard not to be affected by the topic on which you do research. But it's something else when you stand down there, and it *is* muddy, and I understand. But I would say, like, the idea that we can separate the two so sharply might also be a bit faulty. (01:21:39)

Here, another debate about activism and research influences Ejsing's argumentation. Parallel to the preparations for and the execution of the teach-in, a debate unfolded where especially right wing pundits and politicians stepped forth as opponents to "grievance studies" (Dahl, 2020) and activist "pseudoscience" (Trolle, 2020). The debate resulted among other things in the passage of the ratification "V137 On excessive activism in certain research environments" (Dahl et al., 2017).¹⁶ References to this parallel debate about "research activism" recurs in several media sources. Laura Horn says that many researchers fear "that their research can come under fire because they have taken a political stance" (Trolle 2021), and Information directly refers to the fact that "it is still being

¹⁶ I go more in depth with this debate elsewhere in the dissertation.

discussed whether activism is the right approach, and earlier this year, researchers were at the center of an inflamed debate on whether they are allowed to engage in activism" (Knudsen, 2021).

Not only the researchers' role as demonstrators in relation to their status as scientific professionals are subjected to discussion; so too is the combination of disciplines represented at the teach-in. Videnskab.dk recounts that the activists "are working with everything from economy to biodiversity," but that there is "no natural scientists" present, and go on to ask: "*Why is it so important that there is a broad array of research disciplines represented here?*" (Thymark & Nielsen, 2021). Similarly in Arbejderen:

It isn't just climate scientists that have joined the blockade. It is also sociologists and economists. This is no coincidence. The climate crisis is not only relevant to climate scientists, as one of the non-natural scientists who has showed up tells us." (Larsen, 2021)

DR relays a similar story and asks: "Would you also have liked to see some speakers with a 'harder background'?" (Trolle, 2021). Thus, some current debates are playing out, affecting the scientists' statements and the media account of the events in the form of climate crisis and scientist/researcher activism. However, on a more fundamental level, a culturally anchored idea about the norms and ethos of scientists is 'disturbed' in Scientist Rebellion's teach-in.

In her study of manufactured scientific controversies in public debate, Ceccarelli (2011) points out that most lay audiences intuitively subscribe to "a crude positivist or objectivist philosophy of science" (p. 215) according to which individualist and "neutral" *men* of science decode the secrets of the world once and for all (see also Ceccarelli, 2013). Although Ceccarelli is here primarily writes about an American context, she points to some deeper culturally ingrained ideas about science and scientific work that reach wider than that. Several studies even suggest that the global scientific community itself is affected by these more 'conservative' ideas about the role of researchers and scientists. As Keynyn Brysse et al (2013) formulate it, the individual scientist can be influenced by cultural values such as "objectivity, dispassion, restraint, moderation, level-headedness, discipline, self-control" (p. 335). In their interdisciplinary study of the predictions of IPCC reports

throughout the years, the authors demonstrate that climate scientists have had a bias against more extreme climate change predictions that could easily have been justified in their available evidence. "Scientists," the authors elaborate, "strive to be cool-headed, to avoid emotion and drama," (Ibid.) and this, in turn, affects the results and quality of the research itself. These values apparently contrast with the values commonly associated with political activism. Carolyn Miller and Leah Ceccarelli (in press) locate part of the explanation for this value orientation in the sharply increased specialization and industrialization of science in recent history. This specialization within and between disciplines and sciences has contributed to a separation of public and technical spheres. The news media's curious but sceptic account of Scientist Rebellion's teach-in in Copenhagen precisely attempts to understand the teach-in from inside this cultural chasm. Scientists and activists; who *are* these people if they speak from both positions simultaneously?

In contrast to the 'cool', 'neutral' scientific character that clings to the knowledge professions as a cultural norm, contemporary science studies scholars understand the role of science in society in a more complex way. Historians of science today most often view science as a collective process not easily aligned with an individualized and competitive ideal of science that does not leave much room for the epistemic influence of social and political circumstances (Oreskes, 2021). Climate science itself is a prime example: We would not know what we know today about the relation between greenhouse gas emissions and global warming if not for an enormous global infrastructure of knowledge with technological, social, and political dimensions (Edwards, 2010). The point that science is a complicated social process have been made by the interdisciplinary science and technology studies (STS) field for decades (Felt et al., 2017). An example of this point is the idea of postnormal science, borrowed from the philosopher of science Thomas Kuhn's (1970) concept normal science describing the periods between scientific revolutions where most scientific work is in fact carried out. In postnormal science, there is a break with Kuhn's view of the scientific process as isolated from broader societal factors (Benessia et al., 2016; Matthews, 2014; Ravetz & Funtowicz, 1999). The technical sphere is not the same as, yet still very much a part of, the public sphere, and especially in times of global crisis like the climate crisis, the foundation for scientific solutions will be so riddled with uncertainties

and risks that science will also need to function according to non-technical principles (Marshall & Picou, 2008).

For rhetoric of science scholars, the necessity of this broad register of different discourses and habits in the scientific community is a given. Thus, to understand their full responsibility and potential, scientists must be aware that they are always already working on the level of reason (logos), affect (pathos), and character (ethos) in their interaction with the public and each other (Gross, 1990, p. 16). The actions of scientists in public in their capacity *as* scientists will always communicate an idea of what the role of the scientist is and with what it is capable and responsible of contributing. Aristotle's remark in the *Rhetoric* (2009) that ethos, understood as the character of the speaker, is always established in and through the speech itself, not prior to it (1356a), is thus also relevant to the rhetorical expression of science on a fundamental level.

That science and society are inseparable in this sense but that we nevertheless keep separating them in the public conversation about them is touched upon by several the researcher activists in their comments to the journalists, and they try to overcome it in various ways. For instance, Associate Professor Fernando Racimo from the University of Copenhagen's Globe Institute: "I am here today as a researcher and professor – but also as a citizen" (Larsen, 2021). There is an insistence that both roles can be occupied simultaneously, but in this very insistence they also point to their severability to the broader audience addressed. Pamela Pietrucci and Leah Ceccarelli's (2019) article "Scientist Citizens: Rhetoric and Responsibility in L'Aquila" represents this turn within rhetorical scholarship towards an account of the scientist as an actor with a special social responsibility to perform rhetorical ethos virtues in times of crisis. In their reading of the scientific community's communication to the public when the L'Aquila earthquake took place in Italy in 2009, Pietrucci and Ceccarelli argue that it had fatal consequences that scientists stayed within their technical sphere and did not take their responsibility to disseminate their knowledge to the public seriously. The climate crisis is all-encompassing in a different way and takes place on a different scale of time and space than the threat from an earthquake. This does not mean, however, that the scientific community is exempt from considering the ethos virtues in their rhetorical praxis – quite the contrary. Scientist Rebellion's rhetoric takes this consequence to its most radical conclusion, as formulated here by Racimo:

We do this constantly [communicate research through more traditional means] and it is apparently not enough. We feel that it is our responsibility as researchers to get the research out there, and this event, we think, is one way to do this. We cannot be silent anymore when we know the extent of the crisis and how slow its mitigation is proceeding." (Nielsen & Thymark, 2021)

In this way, an intuitive traditionalist and culturally widespread idea of science communication is challenged by a more agile and crisis-conscious, but also more controversial, notion of scientific ethos as socially responsible.

This approach creates tensions, among other places visible in the puzzled journalists' questions about why these researchers cannot simply stay in the classroom, whether they are public or private persons, etc. Brian Weichardt's (2021) video feature with accompanying article text in Ekstrabladet stands apart in the media material. It is clearly the most negatively framed media source and the feature communicates an idea of the demonstration as failed and bordering on ridiculous. The article's subheader thus tells us that "Researchers have had enough', the invitation for a so-called 'civil disobedience' demonstration in front of the Climate Ministry on Monday said. But it was difficult to find climate researchers". The headline itself is not about the scientist activists at all but focus on Sikandar Siddique from the political party Frie Grønne (Independent Greens), who was present at the demonstration and whom Weichardt spend a large part of the video interviewing: "Frie Grønne's leader: Follow us or you will have a planet in flames". Weichardt moves among the audience for the teach-in but, unlike all other journalists, does not interview any of the teaching scientist activists. On the contrary, he finds among others a retiree and a language scholar and asks both of them, as well as Siddique, "what it would cost the normal citizen to change everything" (01:07). The whole report is communicated in the sharp and sometimes sarcastic tone that Weichardt's journalism is known for. In an ethos perspective, it is interesting how this sharp framing, where the interests of the "common Dane" are put forth as inherently in opposition to a green transition, must relay the idea that the amount of scientific expertise at the demonstration itself is absent. The feature thereby seeks to answer the questions put by the other media

sources thusly: There *is* a contradiction between activism and science; therefore, the activists *cannot* be (climate) scientists.

Seen on this background, Scientist Rebellion's teach-in slides between widespread cultural imaginaries about science as based on political impartiality on the one hand and more societally engaged norms for science on the other. This does not mean that the teach-in 'represents' *one* kind of postnormal science or rhetoric of science ideal in direct contradiction to *one* traditional ideal of science, or that the role of science is moving historically linearly from 'objective' to 'political'. Rather, the questions about the role of the researcher raised by the media should be seen precisely as the dynamic that perpetually moves the public's ideas about the relation between science and society. This is an unruly, contradictory, and constantly changing relation. In the following, I argue that these movements and displacements in scientific ethos are bound up with the spatial movements of the demonstration between inside and outside of the institutional context of science.

Spatiality and Movement

Rhetorical critics have recently begun to put larger critical emphasis on spatiality. Places do not simply provide context for rhetorical utterances but is a central part of rhetorical expressions alongside words and bodies. Especially in the rhetoric of social movements, places become a central part of the rhetorical performance and can amplify already existing meanings of a place, temporarily reconstruct the meaning of a place, or create entirely new meanings of a place through repetitive reconstructions of it over time (Endres & Senda-Cook, 2011).

In Scientist Rebellion's teach-in, place similarly provides an important rhetorical function. This is not simply due to the fact that social movements' protests and demonstrations as a rule unfold in carefully chosen places in public space to create visibility and attention, but also to a large degree to the fact that it is the movement from a usual and expected place (the scientific institution) to a unusual and surprising place (the street in from of a ministry) itself that functions as a point of attention and a source for questions about scientific ethos in Scientist Rebellion's action. The teach-in is not only marked by what is written about it and what the scientists are quoted for but is also an "image event" in the longer tradition of the rhetoric of environmental movements (Brunner & DeLuca, 2016; DeLuca, 1999b). Where rhetorical criticism in the 1960's and '70's started to view

"confrontational" rhetoric as rhetorical events that are not simply a regrettable deviation from civilized verbal culture but is also constitutive for the self-understanding of the protestors (Gregg, 1971), DeLuca sees an even wider constitutive potential in radically confronting image events: "[S]uch unorthodox rhetoric ... reconstitutes the identity of the dominant culture by challenging and transforming mainstream society's key discourses and ideographs" (1999b, p. 16). Place thus plays an important role for activist rhetoric in a modern media ecology (Pietrucci, 2015).

The material relocation of the classroom is as central in the media coverage as the question of the researcher/activist role, for example in the headlines: "Researchers block the street in front of the Climate Ministry: »Listen to the science!«" (Nielsen & Thymark, 2021); "The street was a classroom, the bicycle lane was a blackboard" (Viemose, 2021). It is described how the researchers "moved" their "teaching and research out into the open" (Larsen, 2021) and how "the street is appropriated in order to make a classroom, and the bike lane in order to make a blackboard" (Viemose, 2021). The short radio feature on SverigesRadio uses a large part of its time to describe the surroundings of the demonstration. It is described how the researchers are dressed in white lab coats in front of the Climate Ministry. The scene is set thusly: "The speakers succeed each other in the autumn sun. The wide street where the demonstration is taking place is closed off and the traffic must be redirected. The demonstration does not have a permit and the police are standing nearby watching" (00:56). The sunshine in the open street recurs across media articles, and Videnskab.dk describes how researchers and activists "had chosen to block the street in front of a sun-drenched Climate Ministry" (Nielsen & Thymark, 2021). Location takes up a leading part in the photo material also. The media sources that are not radio features all bring photos of both the blocked street and the scientist activists lecturing on the stairs of the Climate Ministry. Several of the researchers, but not all, are wearing white lab coats as a symbol of scientific expertise.¹⁷ Videnskab.dk has pictured Laura Horn in a

¹⁷ The discussion concerning the white lab coat in scientist activist happenings and actions is ongoing in scientist activist movements. On the one hand, the coats create visual attraction as a manifestation of the expertise commonly ascribed to scientific professions. On the other hand, the lab coat risks contributing to

GIF animation where she is drawing a line with chalk on the bicycle lane in order to communicate a point; a situation that is also caught by DR's cameras in the 29 seconds of video material attached at the top of the web article.

In this way, Scientist Rebellion are actively using one of the rhetorical functions of the protest place that Danielle Endres and Samantha Senda-Cook (2011) point to, that is, the temporary reconstruction of the meaning of a place. Such a reconstruction enable movements to "create short-term fissures in the dominant meanings of places in productive ways" (p. 259). This goes for the places that we do not see in the tech-in but from which we assume the researchers come from (the university, the lab, the classroom), as well as the place where the demonstration is taking place and is reported from by the media. By moving the classroom out into the cityscape, it is not only the street in front of the Climate Ministry that is temporarily redefined but to a large degree also the classroom itself that suddenly becomes a different public and political place. It is exactly this crack in the classroom as well as in the Ministry's doorstep – and perhaps the chasm between the two as well - that generates media interest around the demonstration: "So they are here as activists. But what about the researchers, are they here as scientists or private persons and where is the line between the two?" (Viemose, 2021). The researchers have moved and now positioned themselves in an unusual place - and who are they, then? Thereby, the temporary relocation from one place to another becomes the subject of unsettlement and puzzlement around the researcher's role in a society in climate and knowledge crisis. A potential is created for the movement of the reseracher's ethos from the movement's physical movements - the researchers move out into the sun, under the sky, turn the street into a classroom, etc.

I choose to view this unsettlement and puzzlement created by the movement's movements between places as productive for scientific ethos. Not only does it contribute

retaining a caricatured view of what research is and does that is tainted by the specific kind of natural science that takes place in a laboratory. Fractions of Scientist Rebellion around the world are almost always wearing the coats and it has come to be somewhat of an identifying mark of the movement by the time of writing.

to opening discussions about the role of science and scientists' role in society with its challenge to traditional separations between various spheres of action – it also opens up a discussion of the applicability of the concept of ethos within rhetorical criticism in a radically unstable planetary reality. To return to Serres' (2014) crisis thinking, it is exactly this reality – outside of but affecting and affected by science and society – that characterizes the depth and significance of the crisis, like a crack in a tectonic plate: "That fault¹⁸ is the underlying cause of all those surface movements" (p. ix). In the following, I discuss scientific ethos and social movements in relation to this Anthropocene fracture beneath us.

Scientist Activist Ethos on a Fracturing Foundation

To think more deeply about the relation between ethos, place, and movement in this scientist activist direct action, it is useful to supplement the concept of ethos in modern rhetoric of science that I described earlier – the utilization of character as a means to persuasion in public conversations about science – with a broader spatially anchored understanding of ethos.

In his introductory essay to the anthology *The* Ethos *of Rhetoric*, Michael J. Hyde (2004) argues that we need to redefine ethos as not simply designating the appeal to the moral character of the speaker but also the markings of the borders of general societal discourse. Rhetorical ethos can thus be understood as "dwelling places [that] define the grounds, the abodes or habitats, where a person's ethics and moral character take form and develop" (p. xiii). Understood in this sense, and with inspiration from Martin Heidegger's reading of Artistotle's *Rhetoric*, Hyde suggests that we can actually say that the ethos *of rhetoric* "runs deep – to the very heart (and beyond?) of human existence" (p. xxii). Scientist

¹⁸ In the Danish translation (Serres, 2022), the word *sprække* is used, meaning something like crack, fissure, or rift, where the English translation quoted here uses fault – a geological term referring to "a crack in the earth's surface where the rock has divided into two parts that move against each other" (*Fault*, 2023).

Rebellion's teach-in, in this perspective, *finds place*¹⁹ and becomes rhetorically defining for conversations about science and climate, and for how scientists can even understand their role and responsibilities.

I suggest, though, that in our spatial understanding of ethos, we should not receive our philosophical-theoretic input from Martin Heidegger and Calvin O. Schrag like Hyde, but from Brian Massumi. With Massumi (2021), we can say that an action like Scientist Rebellion's is exactly prying open a space for renegotiation of scientific ethos in the affective-rational economy that constitutes science and society. It is exactly these patterns that the movements between places transgress in a way that an opinion article or a book publication could not similarly achieve. Laura Horn's chalk lines on the bicycle lane draw new borders for science's relation to political life, albeit temporarily.

The supplementation of Massumi's thinking to Hyde's dwelling place ethos is essential because it underscores how the conditions for rhetorical definitional work in the conversation about who we are and how to understand the world is characterized by movement rather than dwelling. Perhaps we should even understand the role of the scientists in the climate emergency as an especially unrestful place. Massumi (2017) has concretized this "movement ontology" in terms of political and activist practice and put forth what he calls "the principle of unrest". Massumi describes our unstable political situation (the climate and knowledge-based crises staked out in the beginning of this article, especially in as far as they are triggered by the global expansion of neoliberal capitalism) with this deeper historical principal of unrest that "fundamentally challenges the concept of identity as something stable that precedes movement and mixing" (p. 8). We need to rethink movement(s) in relation to this fundamental unrestfulness, which like Hyde's "ethos of rhetoric" runs through human as well as non-human existence:

We normally think of movement as simple displacement: a change in location. What is in movement is thought of as remaining fundamentally what it was, retaining its

¹⁹ This is a direct translation from the Danish *finder sted*, which is a common way of saying that something happens. In English, it does not carry the same double meaning.

identity across the displacement. But as the human entered into entanglements as it moved through history, it underwent changes in its very nature. It underwent qualitative change. Displacement is just the visible trail of qualitative changes in nature. Displacement is not just a shift of place. It's the index of a becoming: movement not just from one spatial location to another, but from one naturechanging entanglement to another. It's always a question of transformation – transformation in relation. (Ibid.)

In a climate and environmental humanities context, the idea of ethos as dwelling place resembles what William Connolly (2017, 2019) with a concept borrowed from geology calls planetary gradualism, that is, the notion that Earth's climate develops slowly and in a uniform tempo instead of in unpredictable breaks and interruptions. In thinking this way, one overlooks how shifts in climatic conditions can happen in sudden thrusts, such as the passing of so-called tipping points, and how there is therefore no exact and linear relation between greenhouse gasses emitted and the changes in our climate and environment. According to Connolly, the humanities and social sciences have internalized planetary gradualism in their thinking about the development of both climate and society. A dwelling place ethos aligns with gradualist thinking, whereas the unrestful conception of ethos that I propose better accounts for the climate crisis' existential instability for climate, civilization, and rhetorical praxis.

Thus, this understanding of rhetorical ethos in scientist activist climate movements is in line with recent developments in rhetorical studies of social movements. Here, there has been a turn from understanding movement as a noun (a defined group that uses rhetoric to attain its goals) to understanding it as a verb (a fragmented rhetorically constituted social process) (Foust & Alvarado, 2018). Movement, or mobility, has been considered by rhetoricians in connection with studies of the spatial and rhetorical effects of social movements (Samek, 2017). But with Massumi's recognition that movement does not only have rhetorical functions in relation to specific democratic issues but also comes prior to social identity as such, we can accord new significance to the influence of social movements' displacement and transferal of bodies. The movement from one place to another becomes not merely a question of spatial rhetoric in the context of protest but also of activist ethos; of identity. This renegotiation of scientific ethos can support a specific event's social and political potential for change. Scientific ethos is fundamentally moving and moveable as a consequence of the unrestful and perpetual transformation of the foundations for life.

The climate humanities scholar Mike Hulme (2009) has described how assumptions about stability often underpin climate discourse: The climate is moving from a stable condition to an uncontrollable and chaotic condition; and just as it is humans who have caused these destabilizations, humans are responsible of restoring stability. But as Connolly (2019) also notes, this ideology of climate stability is oversimplified and inject the idea of planetary gradualism in cultural understandings of climate change and in its political dimensions. In order to break with this misleading characterization of the relation between developments in society, climate, and science, we need to redefine our relationship to the stability and ontological (de)limitations of these phenomena. Scientist activism and actions such as Scientist Rebellion's have a special potential to shake this image in a climate crisis.

Conclusion

My rhetorical criticism in this article puts things into movement: The unrestful scientific ethos that Scientist Rebellion's teach-in operationalize in public debate points both downwards to the fracturing planet and upwards to existential questions about identity and responsibility. I have attempted to show how the principle of unrest shows itself in the unexpected movement from the institutional nooks and corners of science out into the confrontational sunshine. This movement in my critique reveals as many questions as it answers. But there is especially one way that I think that the perspective I have put forth can not only further our understanding of the rhetoric of scientist activist movements in the climate crisis but also show us what humanities studies of social movements can contribute to movement efforts.

The broader Extinction Rebellion movement works according to a theory of change where non-violent civil disobedience, preferably with many arrests, will at any time be the most effective means of creating progressive structural change (What Is XR, n.d.). The movement bases this on specific social scientific studies of social movements, especially Erica Chenoweth and Maria J. Stephan's (2011) work arguing that non-violent civil disobedience is the empirically documented optimal way to cause positive change in society. This theory of change has some historical backing for its effectivity and is supported elsewhere than in Chenoweth and Stephan's work (Engler, 2016; Sharp & Finkelstein, 1980). A rhetorical-critical perspective on the actions of this movement does not deny that that non-violent civil disobedience can affect positive changes in society but nuances the picture in its understanding of rhetoric as fundamentally situational and of scientific ethos as being in perpetual unrestful motion. This challenges more general principles for activist impact. In other words, this article contributes to what Catherine Foust and Raisa Alvarado (2018) have emphasized as rhetorical scholarship's potential turn towards a humanistic-oriented understanding of the change-creating potential of social movements: "Where the study of social movements has been disproportionately reliant on social scientific models of predictability, a humanistic focus allows researchers to acknowledge the fluidity and diversity of social movement and rhetoric" (p. 14).

The teach-in in front of the Climate Ministry illustrates this potential for nuancing theories of change. My analysis suggests that it was not so much the confrontational disobedience and rebellious elements that were picked up by the media, but that it was the spatial and metaphorical displacement of the scientist role that created a discussion about the relations of climate, science, and society, and in reality was able to supply the public audience with the message of the demonstration. Subsequent developments in the Nordic Scientist Rebellion movement's work affirm this picture. On April 6 2022, the movement carried out another blockade in front of the Climate Ministry, although this time not in a teach-in format. The researchers instead blocked a traffic intersection and several of them were arrested. Thus, the radical and confrontational elements were intensified. The media coverage, however, was at a minimum, which stands in apparent contradiction to the theory of change of Extinction Rebellion where arrests create attention and momentum.

As scientist activist rhetoric becomes more widespread and more radical as the climate crisis progresses, new situations will occur where traditional imaginaries of scientific ethos are challenged. This article has contributed to describing this development's relation to the potential for positive change of social movements at the intersection of the rhetoric of science and social movement rhetoric. Future research in this intersection needs to position the rhetorical critique in contemporary climate and environmental humanities frameworks and consider the rhetorical critic's own position on a changing planet. The media sources' questions about who can be a climate researcher or

scientist, and who cannot, is thus also relevant to the discipline of rhetoric. Rhetorical studies is a human science but should and can it also be a climate science?

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Bodies On or Off the Gears of the Science Machine? Scientist Activist Ethos and Machinic Logics at the Science Museum

Abstract: On May 19 2021, the scientist climate movement Scientist Rebellion (SR) disrupted the opening of the "Our Future Planet" exhibition at the Science Museum in London, UK. The scientists were specifically troubled by the fact that the oil company Shell was the main sponsor of "Our Future Planet" and thus 'greenwashing' their image through the Carbon Capture and Storage science exhibition. This article presents a rhetorical critique of SR's civil disobedient direct action, examining the (re)negotiation of scientific ethos unfolding in activist practice. First, the contribution that a critique of scientist body rhetoric in a climate protest setting makes to the fields of rhetoric of science and social movement rhetoric is staked out. Second, four "machinic logics" at play at the "Our Future Planet" protest are presented: 1) Climate understood as machine, 2) the denial and delay machine, 3) oppressive politics understood as machinic in activist vocabularies, and 4) the political and ethical issues and entanglements with the former three as they specifically relate to what C. Wright Mills (1958) calls the "Science Machine". Third, an analysis of the livestream of SR's direct action shows how the scientist activists' interruption and intervention in this cacophony of machinic logics relates to scientific ethos in productive, yet contradictory ways. Finally, it is argued that SR succeed in creatively highlighting Shell's greenwashing agenda and the contradictions inherent in the Science Museum's cooperation with Big Oil, but would do well to touch upon the scientific community's own investments in the Science Machine that stifles and prohibits urgently needed political climate action.

Keywords: Scientist activism, global warming, greenwashing, scientific ethos, machinic logics

Introduction

On May 19 2021, Scientist Rebellion (SR), a subchapter of the larger Extinction Rebellion (XR) climate justice movement, disrupted the opening of the "Our Future Planet" exhibition at the Science Museum in London, UK. This exhibition, sponsored by the oil company Shell, showcased the latest developments in Carbon Capture and Storage (CCS) technologies, presenting them as a solution to global warming caused by greenhouse gas emissions. Troubled by the museum's cooperation with Big Oil on a climate science exhibition, the scientist activists engaged in a creative performance outside the museum

entrance: obscene creatures in business suits with oil crates for heads spilling goo on the ground and cleaning personnel sweeping it away; an impromptu lab in the street; a "Greenwashing Machine" with a "bullshit detector" being switched on and off. Inside the exhibition, lab coat-clad scientists had locked themselves to one of the exhibition's CCS machines, talking to museum visitors about why they were blocking the showcased technologies. In an open letter to the museum leadership, which was also delivered as a speech in front of the museum entrance, the activists stated that they "love the Science Museum" and "are excited to see the museum reopen with a landmark exhibition on the climate emergency and what to do about it" (Scientists for Extinction Rebellion, n.d.). However, they continued, "it is with great disappointment that we see the museum would allow its reputation to be tarnished by allowing this exhibit to be sponsored by Royal Dutch Shell," who "has a long history of spreading cynical misinformation" and "has a clear vested interest in [carbon capture and storage technologies] being promoted over other measures to mitigate emissions." Shell, SR argued, is not genuinely interested in scientific solutions and CO₂ capture so much as in "narrative capture," ultimately framing the problem of the relation between CO₂ emissions and climate change as solvable by quick fix technologies instead of the more obvious alternative of leaving the fossil fuels in the ground - an alternative that would hurt the profits of these corporate giants. The letter and speech ends with a plea to tell a story more attuned to the true values of science:

Museums exist to tell stories and the Science Museum Group tells many that are beautiful and powerful. But, the story your partnership with Shell tells is an ugly one of power, manipulation and corruption. It is urgent that you now do the right thing and cut all ties to Big Oil. (Ibid.)

The museum space is a cultural arena for the struggle of ideas and values. In terms of natural resources such as fossil fuels, scientific museums are "organizing material cultures which in turn generate new social narratives and civic behaviors" (Bennett, 2005; Le Menager, 2012, p. 379). With "Our Future Planet", the Science Museum – and by extension the exhibition sponsor Shell – is pushing the narrative that technological innovations are just around the corner to solve climate change issues. Thus, the audience is invited to take on a techno-optimist attitude to geoengineering fixes when confronted

with the overwhelming scientific evidence of anthropogenic global warming and its devastating consequences. As Mel Evans writes in *Artwash: Big Oil and the Arts:* "In the global casino that is the international oil industry, arts sponsorships play a vital role in securing access to power and acceptability in the eyes of consuming publics" (2015, p. 12). The stakes of this issue are arguably even higher in the case of scientific museums. Here, Big Oil is 'all in': Not simply sponsoring aesthetic cultural experiences for brand value but actively using the exhibition space to promote ideas intended to lead public attention away from the urgent imperative of phasing out fossil fuels.

That central stakeholders in the fossil economy are pushing ideas of technological solutions to delay climate action is a well-known and extensively documented phenomenon (Lamb et al., 2020; Mann, 2022; Rajak, 2020). This article deals with how scientist social movements such as SR respond to them, and the implications for the role of science and scientists in society that this struggle against Big Oil greenwashing entails. With this aim, I examine SR's protest action at the Science Museum as a rhetorical performance of scientific dissent; a critical interruption (Pezzullo, 2001) on behalf of the scientific community employing the carnivalesque elements characteristic of climate justice movements such as SR and the broader XR movements (Bruner, 2005; Melia, 2021).

The Science Museum protests merit critical attention because of its centrality to discussions about science, politics, activism, and climate within academia and in public debate. An increasing number of scientists are radically engaging in this debate as the climate and ecological crisis deepens (Quackenbush, 2022). That is, this particular act of non-violent civil disobedience touches on science's relation to politics in the climate and ecological crisis on several levels. In blocking the "Our Future Planet" exhibition with their bodies *as scientists*, SR participates in the ongoing (re)negotiation of scientific ethos. In the rhetoric of science field, the ethos of scientists has been examined in terms of its perpetual reinterpretation and reemployment as a mode of persuasion in the public sphere, which carries real consequences for science's relation to the rest of society (Ceccarelli, 2013; Walsh, 2013). It is this article's aim to critically examine the dynamics of scientific ethos as it unfolds in activist practice within the cultural logics of the museum space. An intense struggle about science, technology, and climate politics unfolds at the Science Museum: In chaining themselves (both literally and figuratively) to the exhibition's mechanical trees, the scientist activists attempt to put their bodies on the gears of Shell's "Greenwashing

Machine", thus pulling the levers of several machinic logics of politics and science in the Anthropocene. It ultimately invites questions about scientists' relation to what social theorist C. Wright Mills (1958) – writing at the height of risk of global nuclear annihilation in the Cold War – called the "Science Machine"; that is, the scientific workforce's tendency to fall in line with the destructive impulses of the powers that be. Scientist activist actions like SR's Science Museum protest therefore urges us to ask what kind of social responsibility scientists should take upon them when facing the broad-scale climate and ecological destruction both diagnosed and made possible by modern science.

First, I briefly reflect on the contribution that a rhetorical critique of SR can make to rhetorical scholarship on social movements and the rhetoric of science. Cutting across several subfields of the discipline, scientist activism helps us reorient our critical efforts in times of planetary crisis. Second, I describe what I call four machinic logics that SR's protest action intervene in: the climate as machine, the denial and delay machine, the machine metaphor in opposition to the prevailing order, and the Science Machine. While all four logics are operationalized in different ways in SR's direct action, I argue that the latter, Mills' (1958) notion of the Science Machine, binds them together and serves as a useful ethical framework for discussing science's role in times of planetary danger brought about in part by technological developments. Third, I turn to the specific protest action as it was recorded and live-streamed by the activists themselves. This recording is instructive for studying scientific ethos in the activist practice as it not only gives a comprehensive account of the events inside and outside the Science Museum but also features prerecorded statements from each of the seven scientists chained to the CCS machines in the exhibition, illuminating the mix of verbal and material sources for the rhetoric of the event. Fourth and finally, I discuss the scientist activist interruption and intervention in the cacophony of machinic logics as it relates to scientific ethos. I argue that SR succeed in creatively highlighting Shell's greenwashing agenda and the contradictions inherent in the Science Museum's cooperation with Big Oil, but would do well to touch upon the scientific community's own investments in the Science Machine that stifles and prohibits urgently needed political climate action.

Scientist Activist Body rhetoric and Ethos

According to Phaedra Pezzullo, "Bodies are defined rhetorically, within specific contexts of power and history, and their value is constantly contested" (2007, p. 10). Social movement rhetoric and rhetoric of activism scholarship has routinely dealt with bodily manifestations of protest and dissent (Alexander et al., 2018; Crick, 2020; Foust et al., 2017). Many instructive studies in this vein turn to environmental protest and its corporeal dimensions. In Kevin DeLuca's work on the image events of environmental protests (1999a), for instance, bodily modes of argument are central. Environmental movements such as Earth First!, DeLuca argues, "slight formal modes of public argument while performing unorthodox political tactics that highlight bodies as resources for argumentation and advocacy" (p. 9). However, the bodies of scientists and their rhetorical dimensions are rarely subject of the scrutiny of this vein of scholarship, which, in turn, inadvertently mirrors a view of science as a disembodied activity that various branches of STS scholarship have spent decades challenging (Daston & Galison, 2010; Haraway, 1988; Schaefer, 2022) and even in these challenges to naïve positivism, scholars have rarely been occupied with scientists who use their body to express dissent. Rather, the focus tends to be on how the scientist figure comes to be constructed "as an evaluator of hypotheses, whose body is expected to perform as necessary and in silence," (Koutalos, 2020, p. 203) and how historical norms of objectivity promote "exclusion of the scientist's will from the field of discourse" (Daston & Galison, 1992, p. 117). This tradition of scholarship has done important work in showing the often ideologically concealed heterogeneity of scientific work and culture (Pickering, 1995) and the political dimensions of these domains (Hackett, 2008), but has been less concerned with engaged scientist bodies moving outside their institutional contexts.

Rhetoric of science and rhetoric of social movement scholarship (although rarely integrated with one another in rhetorical critiques) can provide valuable insights here. The former field directs our attention to rhetorical dimensions of scientific discourse broadly (Ceccarelli, 2001; Gross, 1996; Prelli, 1989) while the latter, again broadly, studies "how symbols [in social protests] – words, signs, images, music, even bodies—shape our perceptions of reality and invite us to act accordingly" (Morris & Browne, 2001, p. 1). Instead of narrowing down each of these broad accounts of two traditionally separate fields of rhetorical scholarship and *then* see how and if each of them fit the case of SR's Science

Museum protest, I let the particularity of the phenomenon under scrutiny - scientist activism in the climate and ecological crisis – guide the article's critique in order to inform both fields. That is, I understand SR's protest against Shell's greenwashing as cutting across common critical inclinations of several subfields of rhetoric exactly because their bodies 'cross over' between technical and public spheres, while in so doing problematizing ideas of their rigid separation. This can contribute to rhetorical studies on social movements, science, as well as environmental and climate rhetoric. As I argue in the following section, SR's protest cuts across and intervenes in several logics operating in climate science and politics in a way that automatically poses questions about scientific ethos as it unfolds in activist practices. Scientist activists must attempt to operate this heavy cultural and political machinery, positioning themselves carefully in scientific and political realms of action. In other words, they must rhetorically navigate being part of the vast infrainstitutional global webs of science and politics (Edwards, 2010) while also engaging in nonviolent civil disobedience work designed to cause frictions in the operations of these very webs. In the analysis of the "Our Future Planet" protest, I will employ rhetorical scholarship focusing on disruptions of cultural and political patterns in order to show the significance as well as the problematics of the body rhetoric of the scientist activists.

Before engaging directly with the scientists' rhetoric at the Science Museum protest, I will lay out what I call the *machinic logics* at play in this case. Understanding these logics is crucial to a critique of scientific ethos as it is employed and renegotiated in activist practice and performance related to climate science and geoengineering technologies.

Machinic Logics at "Our Future Planet"

It is an indisputable, and perhaps banal, point that machines are at the center of modernity, and thus at the center of the climate and ecological crisis. Industrial-scale machinery has made possible extraction and burning of fossil fuels, and graphs visualizing the increase in greenhouse gasses alongside the rise in global average temperatures takes a noticeable upswing at the beginning of the industrial revolution in the late 19th Century. Perhaps because machinery is such a pivotal aspect of life in modern civilization broadly – to the point that human beings and other species have become entangled with machines in our very attempt to subjugate nature (Hudson, 2018) – many see continued technological innovation as the primary solution to the rising temperatures changing Earth's climate.

Renewable energy technologies such as wind turbines and solar panels are seen as vital technological alternatives to oil, gas, and coal (and non-fossil but risky power sources such as nuclear energy).

However, the dream of a different kind of techno-fix is on the rise: Carbon Dioxide Removal (CDR) technologies designed not as alternatives to fossil energy but to counteract the worst effects of their burning, such as Carbon Capture and Storage (CCS) technologies designed to pull greenhouse gasses out of the atmosphere and store it underground, alongside geoengineering technologies like solar geoengineering where particles are sent into the stratosphere to reflect sunlight back into space. It is CCS technologies that "Our Future Planet" exhibits specifically.²⁰ Climate scientists mostly agree that CDR approaches will have to play *some* part in the transition to a sustainable biosphere. However, they also warn that there are major problems with these technologies and that they cannot stand as the sole, or even main, measure of climate mitigation. Assuming CDR and CSS technologies are operable, their future phasedown (Parson & Buck, 2020), cost, scale and implementation (McLaren, 2019), the fact that most such technologies will eventually emit the greenhouse gasses again (Mac Dowell et al., 2017), and more, are issues making it a controversial 'solution' to climate change. Ultimately, reliance on these technofixes risks causing political inertia in terms of phasing out fossil fuels and stopping emissions on the scale critically needed to avoid catastrophic climate change (Markusson et al., 2018; Moriarty & Honnery, 2021). In the fossil economy, "the upper arc of capture refuels the lower arc of ever-deeper extraction" (Malm & Carton, 2021, p. 23). Thus, a market logic of "technological solutionism" (Morozov, 2013) is at play here: If CO₂ can be captured, then stored or even repurposed, continued profits can be generated that would otherwise be stunted by leaving the carbon in the ground.

²⁰ A distinction can be made between CDR and geoengineering. Where the former simply seeks to remove already emitted greenhouse gasses, the latter are designed to actively alter the Earth's climate systems to counteract warming. The distinction is important in terms of risk: Where failed CDR proves simply ineffectual to global warming (although potentially causing political inertia), failed geoengineering could *in itself* accelerate global warming and ecological destruction in catastrophic ways.

In chaining themselves to the "mechanical trees" in the exhibition, and in placing a "Greenwashing Machine" in front of the Science Museum entrance, SR's activism works with and against what I call *machinic logics* in the climate and ecological crisis on several levels. I here refer to machinic logics instead of machinic metaphors, ideologies, discourses, or some other term because it most properly strikes at the underlying pattern in several distinct but overlapping areas relevant to the case. I thus take machinic logics to refer to not merely different phenomena touching upon machines thematically but as structures of thinking that see some aspect of the world as consisting of interlocking parts following a certain powerful pattern and rhythm driving towards some production outcome. Machinic logics are rhetorically relevant to the extent that they structure certain kinds of expression and not others.²¹ Thus, my conceptualization of the machinic in this article follows the Greek origins of the term *mechané*, which has "the primary meaning of a 'remedy,' 'clever expedient,' or 'cleverly contrived means' by which one gets anything" (Schadewaldt, 1979) as quoted in Scharff, 2014, p. 28). A machine produces and reproduces something for someone. This allows for diving into the strategic elements of machinic logics and the rhetorics they inspire and produce, to the extent that rhetoric is concerned with what symbolic interactions and attempts at identification perform in material reality; to put it simply, what persuasive social-symbolic interaction *does*, and how.

Thus, I take another road in terms of conceptualizing the machinic than much contemporary work within the humanities and social sciences inspired by Gilles Deleuze and Félix Guattari's notion of "abstract machines" (2004a; 2004b). Deleuze and Guattari's machine is "defined as a system of interruptions or breaks," (2004a, p. 36) and theirs is a decidedly posthumanist account where biospheric relations – between nature, human beings, technologies, etc. – are machinic assemblages working beyond our subjective impressions. Although much good work in the field of rhetoric has utilized Deleuze and Guattari's theoretical approaches (see Boyle, 2018; Gries , 2015), for the purposes of this

²¹ I am indebted to Karma Chávez for this definition of logics in a rhetorical-critical framework, which she shared at her keynote at the Nordic Conference for Rhetorical Studies in Örebro, Sweden in 2022. See also Chávez (2021).

article I find their account of the machinic unsatisfactory. Where thinking of the machine as a deeply ontological *assemblage* working in breaks and interruptions might enable rhetorical critics to take their field of study in new directions in some cases, in studying scientific ethos in relation to SR's protests at the Science Museum, thinking with machinic *logics* working through interlocking parts and infused with power relations better account for the way machines are operationalized rhetorically in terms of CCS technologies, greenwashing, climate politics, and science. Similarly, my use of this term is to be distinguished from Hardt and Negri's "machinic logic of the multitude" (2004a; 2001, p. 369). Although, as we shall see, there are certainly a multitude of machinic logics at play in SR's rhetoric, the multitude of Hardt and Negri refers to a collective force both upholding but eventually destroying capitalist Empire more than to the specific sense of logics guiding expression in rhetorical situations that informs the rhetorical critique of this article.

Global warming and machines are interrelated phenomena on multiple levels, especially in their connections with science and technology. The space of this article does not allow for anything resembling a comprehensive view of these interrelations. Instead, I focus on four machinic logics relevant to rhetorical ethos as it is put to work in the SR protest at "Our Future Planet": 1) Climate understood as machine, 2) the denial and delay machine working against climate mitigation, 3) oppressive politics understood as machinic in activist vocabularies, and 4) the political and ethical issues and entanglements with the former three as they specifically relate to what C. Wright Mills (1958) calls the "Science Machine". That the four logics are listed numerically should not be taken as a claim about functional similarity. Indeed, as I will explain in the following, they differ in decisive ways in relation to SR's "Our Future Planet" protest.

1) Climate as machine.

In her book on geoengineering, popular science communicator Jennifer Swanson asserts that even though it is scientifically controversial, "Resetting the global thermostat is becoming a vital need" (2018, p. 35). Whether or not, or to what degree, Swanson takes her cue from the ExxonMobile-funded CCS start-up Global Thermostat (the president of which is mentioned in the book's acknowledgements), the idea of a planetary thermostat that can be turned up or down quite fittingly describe this section's initial machinic logic: Climate as a machine. The implication of this logic is that the earth's climate can be repaired or re-

engineered somehow, and that we can understand and predict its future (gradual) trajectories with a large degree of certainty; that it is, in the end, within human control. This logic runs deep throughout modernity – and might even be a catalyst for modernity as such. Feminist ecologist Carolyn Merchant argues that "The new mechanical philosophy of the mid-seventeenth century achieved a reunification of the cosmos, society, and the self in terms of a new metaphor - the machine" (1983, p. 192). An effect of the scientific revolution of the early modern period, Merchant argues, was a patriarchal view of nature as "dead, inert, and manipulable from without," (p. 214) a resource to be extracted and mastered, as opposed to earlier conceptions of nature as organic and to be cared for. Viewing earth in a mechanistic frame has thus enabled, and continues to enable, the resource extraction underpinning the global spread and 'progress' of colonial and capitalist domination (Ghosh, 2021). With DeLuca (1999a): "In Western culture, the "fathers" of modern science, Bacon, Descartes, and Galileo, constructed nature as an object to humanity's subject, a machine [emphasis added], matter in motion. This disenchanted, scientific nature has held sway as the dominant meaning of nature ever since and has been crucial for the projects of science and industrialism" (p. 47).

Indeed, when dealing with climate engineering specifically, Clive Hamilton (2013) notes that its appeal "runs deeper, for as an answer to global warming it dovetails perfectly with the modernist urge to exert control over nature by technological means" (p. 107). Historically, the wild dreams of altering or healing the Earth's climate have "in large part been driven by scientists' search for levers, the small changes in Earth's system that can have profound global effects," (Kintisch, 2010, p. 77) and this system-level machinic logic comes to expression as a "treadmill of production" rendering "green capitalism, as a project, either a technological fetishization imbued with naïve optimism, or the calculated emergence of new markets and the "greenwashing" of old ones" (Goldstein, 2018, p. 29). As Jesse Goldstein argues in his fieldwork-based account of cleantech start-ups and investors, a 'green capitalist' framework produces considerable contradictions. However, that geoengineering capitalist adventures viewing the climate as thermostat is riddled with contradictions does not make it any less dominating as a machinic logic. Instead, it is exactly the ingrained idea of climate as machine that allows business as usual to trump the urgency of decarbonization of the global economy. This produces (or reproduces) fantastic opportunities for venture capitalists and cleantech/geoengineering entrepreneurs but, on

its current terms, chews up and spits out almost all other human and non-human life in the "Capitalocene" (Angus, 2016; Moore et al., 2016).

Thus, within dominating strands of ideological foundations of modernity and global capitalism viewing nature and climate as a machine, a techno-optimism is produced to square the contradiction of increased climatic catastrophe and continued fossil fuel extraction (Rajak, 2020). This first machinic logic at play at the Science Museum is therefore simply on account of its pervasiveness the deepest and the most difficult one to address and uproot.²²

2) The denial and delay machine.

If Swanson's book quoted above were influenced, or even financed, by an ExxonMobilefunded DAC start-up, it would be unsurprising considering the second machinic logic at play at the Science Museum controversy. Social scientists Riley E. Dunlap and Aaron M. McCright have worked extensively with the organized efforts to deny climate scientific evidence and obstruct climate mitigation efforts. They characterize these organized efforts not as a blind historical force but as a "denial machine" consisting of "Contrarian scientists, fossil fuels corporations, conservative think tanks" and "self-designated experts, public relations firms, astroturf groups, conservative media and pundits, and conservative politicians" (2015, p. 144). Thus, Dunlap and McCright describe the work against emissions regulation broadly as a conscious strategy in service of fossil capitalists. This move is by now well-described in literature dealing with the complex yet evident climate denial campaigns at least since the early 1990's (Antonio & Brulle, 2011; Li et al., 2022; Oreskes & Conway, 2010; Williams et al., 2022). The denial machine of course rests upon and exploits the culturally grounded machinic logic of climate as machine described above, but it cannot be reduced to it. If we limit ourselves to viewing climate science and global warming denial and delay as outgrowths of deep ideological structures, we risk overlooking the

²² We might also do well in attending to how far this uprooting should go. Holly Jean Buck (2019) argues that opposing industrial solutions altogether – a common strategy within Left politics and climate justice social movements – risks overlooking how geoengineering infrastructures can, and perhaps should, be part of anti-capitalist policy development. See also Parenti, 2020.

rhetorical efforts at manufacturing scientific controversy at play (Ceccarelli, 2011), with fossil capital stakeholders absolutely aware of the existence and acuteness of global warming but intentionally working against struggles to better the planetary predicament. Perhaps this logic should be viewed more fittingly as the strategic component of the climate as machine logic.

The denial machine as formulated by Dunlap and McCright in 2015 needs today to be supplemented with a component of climate *delay*, that is, the efforts not to deny scientific evidence of the existence of anthropogenic climate change as such but to instead delay and obstruct political decisions with other arguments (Lamb et al., 2020). The lofty promises of geoengineering and cleantech "solutions" – "*Technological optimism*" (p. 3) – now favored by fossil energy companies is exactly such a delay strategy pushing nontransformative solutions. Thus, there is a denial and delay machine in place today that exploits the logic of climate *as* machine to push technical and scientific "solutions", reproducing the continued legitimacy of fossil fuel extraction. Shell's investment in scientific exhibitions on future cleantech miracles works in accordance with this machinic logic.

3) Oppressive politics as machine.

Turning to the cultural tradition of protest and activism, an altogether different machinic logic, pushing back against the previous two, can be traced. The machine's associations of non-human efficiency and non-emotional raw power to produce and reproduce objects without ethical qualms casts it for many as an obvious candidate for the representation of the political powers that be, coldly and efficiently upholding and reproducing the status quo while disregarding genuine human needs and interests. The machine metaphor is useful for a critique of hegemony because it can be used to point to individual institutions, practices, or ideologies (the individual parts, or cogs, if you will) while also protesting a larger, systematically unjust state of affairs (the machine as a whole). An example can illustrate the machine's resonances in social movement and activist vocabularies: In one of the most famous speeches of the 1960s countercultural protests in the US, Mario Savio, a prominent member of the Berkeley Free Speech Movement, delivered these words from atop a police cruiser:

There is a time when the operation of the machine becomes so odious, makes you so sick at heart, that you can't take part; you can't even passively take part, and you've got to put your bodies upon the gears and upon the wheels, upon the levers, upon all the apparatus, and you've got to make it stop. And you've got to indicate to the people who run it, to the people who own it, that unless you're free, the machine will be prevented from working at all! ("Put Your Bodies Upon the Gears and Upon the Wheels," n.d.)

The machine as a system to be resisted is thus pervasive throughout Western popular counterculture.²³ These political and cultural uses of the machine metaphor likely spring from early 20th century fascism's fascination with the machine and its perceived over-/extra-human qualities and power as most vividly described in Filippo Tommaso Marinetti's Futurist Manifesto of 1909. The fascist fetishization of the machine in the early 20th Century has been described by historian Jeffrey Herf (1984) as "reactionary modernism," a fascination of steel and power made possible by industrialism's intensified factory production. Andreas Malm and the Zetkin Collective (2021) point to how the early Italian fascists were not only deifying the over-human machine able to brush aside weak and soft 'inferior' bodies but were also intensely fascinated by the machine's potential for energy production and consumption. Subsequent anti-fascists, and left-leaning political figures and artists more generally, have thus been occupied with resisting 'the machine' one way or the other, showing the cultural resilience of this particular metaphor for power and resistance.

We should not confuse the specifically fascist leanings towards fossil energy with the climate as machine logic laid out in the beginning of this section, although there are points of connection. What we instead should notice in the machinic logic of resistance to

²³ Think of political rock group Rage Against The Machine or going further back, folk musician Woody Guthrie's guitar spelling out "This Machine Kills Fascists" on its sound case in the early 1940s – a partly ironic play on the machine metaphor, ridiculing representatives of the actual fascist machine's tendency to label peaceful cultural products as dangerous and violent.

'the machine' is how activists and social movements tap into machinic production as a cynical production of power in order to express dissent. In terms of SR's Science Museum protest, they materially represent Shell's oppressive machine as a "Greenwashing Machine," satirizing the CSS machines inside the exhibition. And in a literal sense they put their bodies on the gears inside the "Our Future Planet" exhibition space by locking themselves to these machines. Thus, they operationalize the countercultural machinic logic of resistance to oppressive politics with their scientific body rhetoric. Note that this machinic logic (the imperative for resistance to 'the machine') typically works *with* environmental and climate justice movements *against* the former two logics, providing a tension at the heart of society's relationship to machines in the climate and ecological crisis.

4) The Science Machine.

Perhaps because of its central place in cultural vocabularies of resistance, the machine is also frequently invoked as the intellectual's metaphor of choice when talk falls upon civilizational demise, decay, and danger. In his two volume *The Myth of the Machine* (1967), social theorist Lewis Mumford cautioned that modern technology could end up drastically accelerating the already rampant process of shaping of human life in accordance with ageold mechanics of domination and violence. Mumford invoked the term "the megamachine" as a metaphor to illustrate how even in early civilizations, those in power had put in place structures of labor relations and technological innovation serving as a model for all later forms of mechanical organization. Borrowing Mumford's term, Fabian Scheidler (2020) takes the Megamachine concept into a contemporary context in his book about the civilizational failings, and impending collapse, of the modern world as it has come to take shape during the last 500 years. "In this case," Scheidler explains, "machine' does not mean a technical apparatus, but a form of social organization that seems to function like a machine" (p. 15). The machine metaphor then, as in the countercultural machinic logic sketched out above, invites us to understand different systemic problems in our social world as connected and part of the same phenomenon, producing something for someone and on the backs of others.

However, another massive machine takes center stage in this article. Building on his insights in *The Power Elite* (1956), American social theorist C. Wright Mills' *The Causes of World War Three* (1958) argues, as the title indicates, that these elites, in America as well as the Soviet bloc, are responsible for pushing towards a new world war – this third and
perhaps final time characterized by the possibility of nuclear annihilation on a global scale. Mills rejects the fatalistic idea of the failings of 'human nature' as well as the equally bleak view that the thrust towards war is simply 'what the people want'. Instead, the military, economic, and political power elites are exploiting the "moral insensibility" of the citizens of the modern mass society – that is, the radical separation of social life and political decision-making – to push a certain idea of reality in which war comes to be seen as the necessary and inevitable outcome. Scientists and other "cultural workmen" are not unaffected by this moral insensibility but they do, according to Mills, carry a special responsibility that other citizens do not.

It is in this context, that Mills lays out the destructive and productive role of what he calls the "Science Machine," which he defines as "a corporate organization and rationalization of the process of technological development and to some extent ... of scientific discovery itself" (p. 161). In the context of the Cold War nuclear arms race, this, of course, had to do with scientific research leading to development of weapons and what is commonly referred to as the military-industrial complex. If scientists in this context let themselves drift along with the rest of the public, they end up oiling the gears of the Science Machine put in place by the power elite. Scientists, therefore, "ought to work within their scientific tradition and refuse to become members of a Science Machine under military authority," and they should "publicly defend and practice science in terms of its classic, creative ethos, rather than in terms of the gadgets of the overdeveloped society or the monstrous weapons of the war machines" (p. 169). Importantly: "In passive and in active ways, they ought unilaterally to withdraw from, and so abolish, the Science Machine as it now exists" (pp. 169–170).

The connection I draw between nuclear weapons technologies in the Cold War and geoengineering in today's climate emergency is not far-fetched. In fact, Hamilton (2013, p. 120) draws our attention to the direct connection between nuclear weapons developers in the Lawrence Livermore National Laboratory and the geoengineering entrepreneurs of the climate crisis era, many of the latter formerly employed at the San Francisco nuclear weapons facility. Eli Kintisch (2010) calls this connection "the Livermore taint" (p. 98), linking up weapons technology and cleantech. However, I use Mills' Science Machine here not to postulate a 1:1 relationship on the current state of science, society, and climate crisis, and the relations of these during the height of the Cold War. My intention is rather to point

to the machinic logic linking the global scientific community to ethical dimensions of contemporary climate politics today. Just as in the years of heightened threat of nuclear annihilation, science must also today grapple with its complicated role in a sociotechnical game of planetary destruction. Consider the following passage from Mills (1958) and compare it to contemporary technological optimism and Shell's branding of themselves as part of the solution to the emergency in "Our Future Planet":

For the first time in American history, men in authority talk about an 'emergency' without a foreseeable end. For the first time in world history, men find themselves preparing for a war which, they admit among themselves, none of the combatants could win. ... Yet men of power, even as they talk about peace, practice for war. (p. 11)

Preparing for ever deeper drilling for fossil fuels while talking about fantastic technologies to save the world; Shell and their political allies, the "men in authority", know all about the emergency, yet they cynically deepen its severity. It seems, then, that we are facing a similar, albeit not identical, historical 'first'. In this dire situation, science and scientists cannot comfortably lean into an uncomplicated stance on the side of 'solutions'. Rather, like in the Cold War nuclear arms race, scientists are at the core of the problematic: As the diagnosticians of the scope of the crisis and what we can do about it, as well as the intellectual source behind the development of the technologies making possible both fossil extraction and CCS technologies. If scientists want their work and values to align with democratic progress and the common good, and if we are willing, in this case, to substitute the word military with climate in the following quotation, we can, with Mills, ask: "What scientist can claim to be part of the legacy of science and yet remain a hired technician of the military [/climate] machine?" (p. 130).

All this is not to claim that science should somehow cut its ties to machines, which would indeed be an absurd position. In fact, there are even important ways in which machinic logics in science are central to climate science's ability to describe with incredible precision the trouble in which we find ourselves. In *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*, Paul Edwards (2010) lays out in great detail the complex history of the global knowledge infrastructure that has produced the

evidence of anthropogenic global warming. According to Edwards, climate science is a machine in the sense that it is "a sociotechnical system that collects data, models physical processes, tests theories, and ultimately generates a widely shared understanding of climate and climate change" (p. 8). This machine's vastness – its extension in historical time and global space – makes it inextricably linked with state and corporate interests, developments in scientific communities, military developments, technological innovation, politics, etc. It is, in this sense, a paradigmatic case for the co-production of science and society (Jasanoff, 2006; Jasanoff & Martello, 2004; Miller & Wyborn, 2020).

So, building on Mills' essay and Edwards' work, I take the climate and ecological Science Machine to refer to the political-technical dimension of the global knowledge infrastructure that is climate science. Mills' distinctive contribution to this critical assessment of machinic logics is to frame them in the perspective of the political agency and social responsibility of technical professionals in the context of planetary destruction (see also Oreskes, 2020).

To bring this back to the question of scientific ethos, Pamela Pietrucci and Leah Ceccarelli's (2019) conceptualization of rhetorical scientist citizens is instructive. Pietrucci and Ceccarelli advocate a scientific ethos enabling scientists to "think of themselves beyond their role as analysts isolated and protected in the technical sphere" (pp. 100-101). This is a productive way to think of scientific ethos in the climate and ecological crisis where scientists possess essential expertise that other members of the public do not. As scientists are indispensable components of the vast climate machine, the isolationism of the 'neutral' scientist so often imagined seems illusory. However, in its analysis and critique of SR's Science Museum protests, this article radicalizes the perspectives on democratic and political responsibility of scientists. I agree with Nicholas Paliewicz (2019) that "[i]f radical democratic action is the objective of climate advocacy, then dissensus and force are seemingly necessary components of social change, at least within the context of the global climate change," and further that "[g]iven the gravity of climate change inaction ... rhetorical and argumentation critics must attend to the possibilities of dissensus and force" (p. 109). The more recent IPCC report only intensifies this need for dissensus-oriented rhetorical criticism, and the Science Machine is a useful prism through which to meet this need in an ethos perspective.

Thus, I seek to understand the negotiations of scientific ethos as they unfold within radical democratic interventions and interruptions, in the case of SR in an act of civil disobedience. With this strategy, the rhetoric of SR seeks to interrupt, intervene, but also work with dominating machinic logics – and not so much or not only, as in Pietrucci and Ceccarelli's case, to aid the public with crucial information at a pressing time. These scientist activists come out of their technical sphere not to qualify debate but to express a deeper, but no less urgent, dissent towards the prevailing order. In the following section, I analyze how SR's rhetorical engagement with machinic logics at the Science Museum employs scientific ethos in order to push against corporate Greenwashing in the realm of science and technology.

Sabotage and Critical Interruptions in Carnivalesque Climate Science Protests

As an activist group, SR springs from the larger climate social movement XR. Founded in the UK in 2018 and by now spread out to many parts of the world, XR describes itself as "a decentralised, international and politically non-partisan movement using non-violent direct action and civil disobedience to persuade governments to act justly on the Climate and Ecological Emergency" (*What Is XR*, n.d.). SR shares "the principles and values" of its parent movement but focus their efforts on scientist engagement in civil disobedience specifically (*Scientist Rebellion_*, n.d.). From a social movement rhetoric perspective, XR and SR invites "the rhetorical critic to privilege the non- or extrasymbolic dimensions of protest" (Cox & Foust, 2009, p. 615) in the sense that the movement employs highly performative protest strategies centering materiality and the body, such as locking or gluing themselves to infrastructure or sailing a 'sinking house' down the Thames (Robinson, 2019).

Thus, the activism of XR and SR is often intended to cause disruption and make use of spectacular and carnivalesque forms of protests, which, as M. Lane Bruner (2005) argues, has been historically employed to "unmask the humorless state" (p. 153) and ridicule the absurdity of authoritarianism. Bruner analyses the carnivalesque as a protest form where (disadvantaged) people can, under certain conditions, strike at the heart of state authorities' "serious" essentialist notions through which they constitute their oppressive rule (p. 151). Instead of starting out from a state/people schism like Bruner, rhetorical scholar Christine Harold (2007) examines corporate branding strategies and how they attempt to appropriate sub- and countercultural phenomena and commercialize politics and daily life in general. The case of SR's Science Museum protests in opposition to the oil company Shell are more fittingly viewed, with Harold, in the perspective of corporate image and branding strategies such as greenwashing. Thus, we can understand the kind of protest that XR and SR perform in opposition to fossil fuel corporations as akin to so-called *culture jamming*: "interruption, a sabotage, a hoax, a prank, a banditry, or a blockage of what are seen as monolithic power structures governing media and culture" (p. xxv). Much like the rhetorical strategies of the culture jammers operating in the 2000's under examination in the work of Harold "[emerge] from within commercial culture," (p. xxvii) the scientist activism of SR - their interruption and blockage of the exhibition, their carnivaleque banditry of the "Greenwashing Machine" – similarly emerges from within *scientific* culture. Specifically, Harold's category of sabotage as an attempt to break with dominant commercial logics in public spaces helps us understand how SR attempts to throw their "clogs into the machinery in order to stop the flow of production" (p. xxx) of Shell's extractivism.

However, current trajectories of climate and environmental destruction and the overwhelming criticality they impose on life on Earth differ from capitalism's pervasive commercialization of culture in previous decades. While Harold ultimately criticize the sabotage of culture jammers in the case of the *Adbusters* 'subvertising' movement for the ineffectiveness of their exclusively negative critique, which she argues falls flat in a postmodern consumer culture driven by affective circulation tugging at our appetites and desires, SR's sabotage functions on a different level. Although science is certainly an objective for commodification (Mirowski, 2011), its role in the climate and ecological crisis does not mainly concern lifestyle and consumption. Rather, it is a contested political and socioepistemic dimension of public life bearing on our views of ourselves, nature, and the (mis)uses and purposes of knowledge as such.

Thus, sabotage or blockage strategies – throwing clogs into the machinery – in the rhetoric of climate and environmental movements are not necessarily meant to sabotage corporate control of individual choice and consumption; it is more meaningfully concerned with what Phaedra Pezzullo (2001) calls "critical interruptions" in environmental justice

movements. Importantly, Pezzullo argues for the heuristic value of critical interruptions in that they hold the potential to utilize civic experience and local expertise of activists to intervene in narratives of those in power. As we shall see in the following, the Science Museum protests were indeed an interruption and a blockage of the exhibition space intend on using one machinic logic (that of the machine as political oppression) contesting the narratives advanced by the machinic logics of fossil fuel companies like Shell (the denial and delay machine as well as the logic of climate as machine that gives birth to it) – precisely finding the resources for carnivalesque protest and arguments in the ethos of the scientific profession.

The Greenwashing Machine Comes to the Science Museum

The protest event was filmed and livestreamed on the Extinction Rebellion UK Facebook page and later made publicly available as a YouTube video (Extinction Rebellion UK, 2021). It is these recordings, as well as selected media sources, that are the artefacts of analysis in my reading and critique of the protest's rhetoric. The video is filmed with the protestors' smartphones, or some equivalent camera technology, but the streaming itself is produced in a television-like format with a beam in the bottom of the picture sliding messages about the Shell exhibition in the bottom of the picture (such as "LIVE: OUR SCIENCE MUSEUM HAS SOLD OUT TO SHELL!" and "#PlanetaryDeathMachine"). In the more than two hour long video, we alternate between seeing the direct action inside the museum, where seven scientist protesters have used bicycle locks to chain themselves to a part of the exhibition presenting a CCS machine, and outside the museum, where a "Greenwashing Machine" is flanked by protesters in front of the museum entrance. Here, some of the protesters are dressed in corporate suits with gasoline containers on their heads, spilling liquids from a hole in the container onto the street, creating a mess that is constantly and futilely being swept around by other protestors dressed as cleaning personnel wearing aprons and rubber gloves. All these characters perform a bizarre scene where the 'oil people' throw up dirty liquids while the cleaners shout and add a "GREEN WASH" detergent to the oily pool. The Greenwashing Machine itself is a homemade construction made from a large refrigerator with a siren on top, constantly making loud noises while a metallic radar is spinning around as a warning for entering visitors that Shell's greenwashing strategies are unfolding inside. This warning mechanism, we learn from one of the performing cleaners (00:11:54), is a

"bullshit detector," which, as can be seen on the front side of the machine, can be turned either on or off. Thus, the Greenwashing Machine becomes a satire on the CCS machines upon which Shell wants the exhibition's audience to hang their hopes of averting climate disaster.

Inside the "Our Future Planet" exhibition space itself, the scientist activists are interviewed for the live stream by a camera-holding activist, who presents himself not as a scientist but as "a lay person" (01:02:18), and they are seen conversing with curious and slightly perplexed museum guests. The exhibited CCS technologies that the scientists have locked themselves to is a "Mechanical tree prototype": according to the Science Museum "the first working mechanical tree prototype in the world, showing that machines can be built to directly capture carbon from the atmosphere" (Science Museum, 2021). The scientist activists are here performing a protest strategy similar to earlier environmentalist movements who would often chain themselves to trees to deter logging companies from cutting them down – a practice initially adopted by the Chikpo movement in Uttarakhand, India who embraced the mountain region's trees to protect them from timber merchants (Guha, 1991). However, a sort of reversal is at play: The SR protesters are not protecting the tree as much as they are drawing attention to its use as a branding tool for Shell. The Greenwashing Machine materialized outside the museum is thus supplemented by the bodily protest by the scientists at the actual CCS machinery on the inside. Where Shell wants the exhibition's audience to rely on the wonders of machinery to solve the climate crisis, the protesters see a corporate power machine that is indeed working very well - but in the service of the fossil fuel industry.

Disrupting the shifting view between the live locations outside and inside, small self-recorded videos with each of the seven scientist activists blocking the exhibition are inserted. In these clips, the activists share their frustration with the unholy alliance of Shell and the Science Museum and their reasons for taking action. In his video, ecologist Dr. Aaron Thierry, recording from some outdoor area, possibly a forest, states: "So, I think it's time that we scientists stand up alongside everybody else who's listened to our warnings and act in accordance with our findings. And so reluctantly, yes, but necessarily so, I'm gonna be taking action today at the Science Museum" (oo:44:04). Similarly, microbiologist Dr. Abi Perrin is voicing her somewhat reluctant participation:

I am a scientist and ordinarily I love discovering more about the world around us. I would never have thought of myself as an activist or rule-breaker. But in recent years I've not been able to ignore the huge amount of scientific evidence that is telling us we need to take urgent and unprecedented action to save our planet and ultimately to save ourselves. (00:47:05)

Air quality researcher Dr. Pete Knapp, when asked by the lay interviewer what compelled him to lock himself onto the exhibition, points to this reluctance as problematic: "Well, I think it's a really important step for us scientists to step out of our comfort zones. There's a big problem in the scientific community about stepping out and speaking up against this stuff" (1:43:21). Knapp mentions the reliance on fossil investment at his employer, Imperial College London, as an example of something that might hold back scientists from speaking up. He does not claim that scientists are somehow by nature impaired in terms of voicing dissent (on the contrary, he thinks that they should learn to do it more). But he does frame it as problem pervasive in the current scientific environment.

The themes of *reluctance* and *necessity* are then pervasive and somewhat in tension with each other in SR's rhetoric. The scientists are acting 'out of character' in that they are leaving their comfort zone, or, rather, *moving* their comfort zone, into the street as well as their lab coat-clad bodies into the scientific exhibition space, attempting to push Shell of out the story of scientific progress. Thus, the scientists chained to the CCS machine are all wearing lab coats and face masks (as mandated by COVID-19 restrictions at the time) with written messages like "I'M A SCIENTIST" – almost as if to convince the audience that they are really here, in the whirl of resistance. However, there is some ambiguity about whether this is a strong message *because* of the natural reluctance of scientists or whether it is simply a problem that it does not happen more often, as scientists are told to stay within the confines of their institutions and not cause trouble. The perspective on these themes vary from scientist to scientist. For instance when biologist Dr. Valeria Scagliotti speaks her mind in a video shot in a research lab:

I've decided to take action because I follow the science, which is telling us that we cannot wait any longer to do what needs to be done. ... As a scientist working in

medical research, I've learned that the sooner you tackle a disease, the higher the chances to have a better outcome (00:31:09-00:32:25).

Scagliotti tells us that she takes action *because* of her role as a scientist, not reluctantly contradicting it. Even though the surroundings of her lab where the video is shot are strikingly dissimilar to the more chaotic and spectacular protest context, she articulates no awkwardness towards moving from one arena of social action to the other.

The "Our Future Planet" protests are also marked by *expressions of affect*. Geologist Dr. Ben Buse is "full of sadness", speaking from a messy office space in his pre-recorded clip, when he asks the Science Museum to "reject Shell's sponsorship and ensure science is not used to perpetuate destruction" (00:24:19-00:24:50). The scientist activists are, overall, sad, frustrated, and angry because their love for science is contaminated by the Science Museum choosing to play along with Shell's agenda. A case in point is pharmaceutical industry consultant Dr. Caroline Vincent, who paraphrases a famous Greta Thunberg speech to the UN – "How dare they!" (01:36:33) – when talking about the Science Museum's collaboration with Shell. She then immediately apologizes for getting emotional, almost as if trying to fall back in line with a 'proper' non-emotional scientist ethos. "It's an insult to the scientific world," she says, and further: "We are devastated as scientists" (01:36:42). Thus, the scientists show themselves as emotional, sensitive, sad, and outraged even as they seem to recognize the 'fish out of water' situation showing this emotionality puts them in.

The sense of betrayal, and the sadness and anger flowing from it, is bound up with a fundamental love for science and the Science Museum throughout the video. This is apparent in the many comments about having been inspired by the museum as kids but now feeling "completely betrayed" (00:03:40). Dr. Knapp portraits his love for science as his reason for feeling betrayed:

I love the Science Museum. The science is our ally in averting the worst effects of the climate and ecological crisis. But this dirty deal with Shell is an insult to science. ... If anyone should stand up against Shell and its sickening anti-science propaganda, it should be the Science Museum. I feel betrayed. (00:28:16-00:28:48)

Similarly, the data science researcher Jen: "I love science and I love the Science Museum. I came here as a child and I've brought my own children here. ... [Shell] are the problem, not the solution, and their sponsorship of this museum is an insult to the future of every child who walks through those doors to learn, maybe for the first time, about the amazing things that we can achieve as humans through science" (00:49.34-00:50.52).

This love of science and the feelings of sadness and betrayal, alongside the very use of the scientists' bodies to block the CCS machines, then runs up against dominant machinic logics: They put their feeling scientist bodies in the way of the unfeeling machinery of corporate destruction and delay. While the scientist activists are protesting the larger mechanics of Shell's denial and delay machine, they are at the same time intervening in conventional conceptions of the scientist ethos, using their unruly bodily rhetoric to challenge social norms alongside political injustice. Yet, when considering SR's rhetoric in relation to the Science Machine, the picture becomes complex. The divergences in terms of reluctance/willingness to engage in activism and their feelings of betrayal and love in this particular case highlight an ethical dilemma for scientist activists in general: When they use their bodies to disrupt Shell's techno-optimist narrative, should scientists protest the use and appropriation of scientific expertise and innovation *in spite of* their 'natural' inclination towards general disinterestedness and political neutrality or *because of* the social responsibility inherent to the scientist ethos? Does the love of science imply a rigid rhetorical separation between good science and bad powerful interests?

The scientist activist Jen states that by locking themselves to the exhibition they have "become part of the exhibition"; the scientist activists have become "exhibits in and of their own right" (01:59:48). As the live broadcast wraps up, the lay activist interviewer reminds everyone that they should share the video to bring awareness of Shell's greenwashing because "we're up against a machine" (02:13:26). The question then lingers: Of *what* does the #PlanetaryDeathMachine consist and what is the role of scientists in relation to it?

Bodies On or Off the Gears of the Science Machine?

In the overwhelming conjunction of machinic logics at SR's Science Museum direct action, the scientist activists find themselves not only both inside and outside the museum space; they also enter a complex relationship with the Science Machine, albeit without an explicit engagement with this particular logic. While SR engages with the other three machinic logics – either in the form of opposition to them or utilizing them to make their argument against Shell's greenwashing – the role of science itself in the drive towards climate and ecological destruction remains less examined.

SR uses the Greenwashing Machine to satirize the absurdity of cleantech and CCS "bullshit", thus dissenting to the idea of climate as a machine that can easily be fixed. The Greenwashing Machine is also a material incarnation of fossil fuel interests' denial and delay machinery. In chaining themselves to the machines with their scientist bodies, SR employ the vocabulary of resistance to oppressive power of countercultural culture in order to disrupt Shell's narrative. Yet, there is a sense in which they bypass the opportunity to address the Science Machine's thrusting of scientific endeavors towards planetary destruction on a deeper level. The SR activists feel compelled to act radically but they also express diverging sentiments about the position of the scientist body in the midst of global struggles for survival: Is it that scientists are always morally bound to do but regrettably tend to eschew, or does the climate emergency simply present a special case forcing scientists into spaces they shouldn't really occupy? Are they – with all their feelings of anger and betrayal – putting their bodies upon the gears of the Science Machine to make it stop working producing destruction? Or are they – with their deep love for science – protecting institutionalized science from Big Oil's infection in an attempt to keep the machine working, but for the good of humankind? They are, in either case, not in their comfort zone. But where are they, then?

I argue that the truly difficult and transformative work in reconfiguring and renegotiating scientific ethos happens at the machinic logic binding all of the above together: the Science Machine. While SR are clearly taking an ethically engaged stance on planetary destruction, they seem, at the same time, to separate science and scientific institutions from the machinery of power. However, the separation attempt entails its own, deeper problematics. That is to say, the Science Museum might at some point cut ties with fossil fuel companies, but the roots of the Science Machine of geoengineering fantasies go deeper still in the web of science, society, and the biosphere.

Addressing these deeper machinic logics and structures is an ongoing struggle as the wider context of the "Our Future Planet" protests show. The 2021 SR protests were not the first time Shell and other fossil companies' cooperation with the Science Museum was criticized and protested by climate activists. In the past, "Shell sponsorship of the climate change gallery [at the Science Museum] commenced with a statement from the museum 'neither confirming or denying' that climate change was real, with minimal attention paid to the role of fossil fuel companies in creating the crisis" (Evans, 2015, p. 116). Although the "Our Future Planet" exhibition is no longer in place, it is unlikely that SR's protest will be the last if the Science Museum keeps its ties with Shell, BP, and other fossil giants, as these companies' profits soar to historic heights along with greenhouse gas emissions (Lawson & correpondent, 2023).

Throughout the exhibition period of "Our Future Planet", the Science Museum faced continual public criticism. In the summer of 2021, it was revealed that the Science Museum had signed a gagging clause preventing them from saying anything that might hurt the interests of Shell, sparking renewed circulation of the SR protest as well as widespread condemnation (Manji, 2021). That same day, famous Swedish youth climate activist Greta Thunberg retweeted Channel 4's revelations, writing: "The 'Science' Museum just killed irony (and their own reputation)" (Greta Thunberg [@GretaThunberg], 2021), pointing to the absurdity of an institution celebrating science and free thinking while taking orders from a company actively obstructing scientific progress on climate matters. However, the museum leadership did not budge, and only one month later, another SR protest took place at "Our Future Planet". Once again, scientist activists locked themselves to the exhibition – this time ending up spending the night at the museum (Frodsham, 2021). Science Museum director Ian Blatchford responded dismissively with a public statement stating that Shell's sponsorship was for the public good and that "the right approach is to engage, debate and challenge companies, governments and individuals to do more to make the global economy less carbon intensive" (Blatchford, 2021). This of course did not satisfy the activists, and several people who had contributed to the exhibition pulled out. First, the UK Student Climate Network (UKSCN) in London demanded that their 'Keep it Cool' placard be removed from the exhibition space (UKSCN, 2021). Next, climate science professor Chris Rapley resigned from the Science Museum's advisory board in protest of the continued sponsorship (Montague, 2021). Professor Hannah Fry and director of the UK charity Institute for Research in Schools Jo Foster, both trustees of the museum, resigned from the Science Museum Group's board because of the museum's financial ties to Big Oil - specifically the Indian coal mining company Adani who are to sponsor a new 'green'

gallery, due to open in the fall of 2023 (*Energy Revolution*, n.d.). In the summer of 2022, more than 400 British school teachers signed an open letter calling for schools to boycott the museum because of the ties to Adani (Taylor, 2022), and Indigenous leaders from communities in Australia, India and Indonesia have publicly condemned the Science Museum-Adani tie-in (Taylor, 2021). The struggle is thus kept ablaze; Dr. Knapp – one of the SR activists chained to "Our Future Planet" in May 2021 tweeted on February 7 2023 about the Science Museum's continued ties to companies like Adani, BP, and Equinor (Peter Knapp [@PeteK_AQ], 2023).

In a narrow instrumentalist conception of protest rhetoric, SR did not succeed; "Our Future Planet" was not pulled from the Museum Space ahead of schedule, and the Science Museum still receives funding from Shell alongside energy companies like Adani, Equinor, BP, and Urenco (*Annual Review*, n.d.). However, little insight is gained from such a narrow perspective. Seen as culture jamming scientific body rhetoric, SR is engaging in the sustained critique of fossil fuel interests in the climate and ecological crisis. This critique is kept alive by a complex web of social movements putting pressure on institutions broadly in attempts to affect the climate politics agenda. An important effect of these efforts is to draw attention to the presence of fossil fuel interests in the geoengineering discourse, that is, to greenwashing.

Importantly, however, this article aims not simply to account for this process of raising awareness and resisting power. More fundamentally, it aims to examine the renegotiations of scientific ethos at play in the unfolding of these events. The social responsibilities of science is not just worked out at laboratories and universities, or when the scientific expert is brought into the news media to circulate warnings or discoveries. It is also, and perhaps most strongly, formed through social movement rhetoric and the displacement of bodies occurring in its radical forms. Not only are the status quo politics of climate technology interrupted by the scientists' unruly bodies – dominant narratives about these bodies relation to the political realm as such are disrupted.

Conclusion

Science and technology plays a central and paradoxical role in the climate and ecological crisis facing the world today. Indeed, "one of the markers of the post–World War II era is our technological capacity to destroy the bulk of life on Earth, whether by choice or error"

(Nicholson & Reynolds, 2020, p. 2). As a result, "[s]cientists have played contradictory roles throughout history. They have perfected both the instruments of life and the instruments of death" (Kuznick, 2019, p. 2). Just as there is no denying the importance of science in understanding the state of the climate and its future trajectories, there is also no denying that modern science is deeply entangled with the machinery both making possible further emissions as well as CSS and geoengineering efforts causing mitigation deterrence (Hamilton, 2013). In this article, I have argued that SR's Science Museum protest does well at claiming the first achievement, yet fails to fully engage with the second. That is, the scientific ethos performed presumes a natural opposition of science *as such* to greenwashing and corporate climate destruction, but does not fully take into account the problematics posed by the Science Machine co-producing the prerequisites of said greenwashing and destruction.

Engaging with the Science Machine, however, is crucial to climate struggles of the future and the position of scientists herein. Reflecting on climate engineering in so-called "Post-Truth" politics, Holly Jean Buck (2020) observes:

Scientists would do well to communicate their work in a way that acknowledges some of their community's underlying concerns: about inequality of income and opportunity, about extinction and separation from nature. The frame of geoengineering needs to be set so that it can acknowledge and not occlude the human and nonhuman pain of these times. This will likely go contrary to the specialization and narrow foci that define our academic comfort zones. (p. 235)

Buck then goes on to ask a crucial question about democratic legitimacy of science and technology: "Can climate engineering governance be established through choice, reflection, and science — or will it be rather a matter of accident and force?" In the latter case, Buck warns, citizens become cynical as they find themselves "inside the machinations of violent powers" (2020, p. 237).

By assuming a monolithic 'big S Science' in their rhetoric and investing their emotions and bodies herein, scientist activists risk playing into some of the machinic logics accelerating climate and ecological destruction instead of against them. It is exactly in the intersections of activist activity and scientific rhetoric that scientists may find a new

democratized role for themselves, a radically reinvigorated scientific ethos, assisting in the just transition that we know is urgently needed (Jasanoff, 2018). This is difficult and ongoing work to be done in times of political and planetary unrest. This is not to say that SR is not answering Mills' call for scientists to "avoid establishing themselves before publics as hired men of ruling circles, and come to be seen as members of the cultural community, and so responsible to mankind" (1958, p. 163). In opposing Shell's hijacking of narratives of scientific progress, SR shows a radical form of responsibility. However, ultimately, the radical politics of science must oppose the ruling circles more broadly in order to oppose the Science Machine. Thus, it goes for SR as it does for XR generally that they have some unresolved tensions affecting the movement in terms of its goals and strategies. Sociologists Oscar Berglund and Daniel Schmidt point to four such tensions: Is the movement reformist or revolutionary, should the movement remain agnostic towards solutions to the climate crisis, can it continue to rely on its founders' interpretation of social scientific research on effective social movements, and, lastly, should XR continue to avoid talking about the problems of the current political economy? (2020, pp. 3-5). As the Science Machine is a deeply political construction, these tensions must be addressed somehow by scientist activist movements. That this tension remains unresolved shows in the activist performance at the Science Museum: Perhaps the whole bit with cleaning workers actively participating in the greenwashing spectacle, for instance, would be rethought in a more thoroughly constructed class analysis in the movement's work. It would also be possible to address and criticize colonial logics as they relate not only to extractive capitalism and Shell but also to institutional science on a broader scale (Ghosh, 2021; Whitt, 2009). Thus, if we agree with Scheidler's (2020) megamachine diagnosis that "new social and economic structures must be built that allow us to gradually live and operate outside the logic of the Machine," (p. 176) a more fundamental challenge to conventional scientist ethos in light of the urgency of the climate crisis and its powerful perpetrators is in order.

Rhetoricians working with climate and environmental rhetoric, the rhetoric of science, social movement rhetoric, and activism should attempt to track the logics moving across and producing rhetorical phenomena such as SR's "Our Future Planet" protest. A thoroughly pervasive, persistent, deeply existential and political problem, the climate and ecological emergency implore the rhetorical critic to think across subfields in the same creative ways that activists have started doing. Specifically, it is likely that machines will

become even more politically central as the crisis progresses and structural changes away from a fossil economy are still not carried out. Marxist ecologist and activist Andreas Malm (2021) has even suggested that it is time that the climate movement's struggle against fossil capitalists' machines should become physical on a whole new level. DeLuca (1999a) calls for scholars of rhetoric to contribute to the transformation of the environmental justice conversations, because

the critical rhetorician can help reconfigure the grid of intelligibility so that the tactics, acts, and image events of radical environmental groups, including blocking a bulldozer, plugging a toxic discharge pipe, *or smashing a machine* [emphasis added], are not conceived as illegal acts of obstructionism, vandalism, or terrorism. Rather they can be recognized as legitimate political acts that call into question the morality and legality of acts by corporations that displace people and ravage the environment. (p. 154)

Whether sabotage, blockage, or other forms of direct action and disruption, it is an urgent task, especially for scientists, to figure out ways to resist machinic logics of greentech causing mitigation inertia and, ultimately, to "liberate our imaginations, our sciences, our technologies and innovations, from the narrowing, pecuniary logic of capital" (Goldstein, 2018, p. 162). As the political issues of climate change become increasingly serious, movements like XR and SR "ought to consider the relationship between climate change and capitalism and how XR currently relate to this relationship" (Berglund & Schmidt, 2020, p. 102). Such considerations also invite further development of rhetorical expressions and action in tune with the deep changes needed to halt the slow violence brought about by climate disaster (Nixon, 2011). This is a monumental challenge, for rhetorical theory and criticism, and for any other critical knowledge discipline. But there seems to be no way around it. The machinic logics wreaking havoc are still in operation, although they are no longer politically and socially tenable: "That logic – and the strategies premised on it – has now reached the end of its particular road. Another course will have to be charted" (Moore, 2015, p. 291).

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Impure Methodology: Biospheric Crisis, Critical Rhetoric, and Scholarly Engagement in the Uncanny Present

Abstract: Methodology is often, and for good reasons, occupied with the how and why of scholarship and criticism, and participatory variants of rhetorical criticism and critical rhetoric are no exceptions. This essay seeks supplementary re- and/or disorientations for participatory critical practice in that it seeks to turn engaged rhetoricians' attention towards the when and where of criticism. Reflecting on my PhD research on scientist activism in the climate and ecological emergency, I explore the inherent impurities of science and politics in the deteriorating biosphere. First, I discuss main currents within critical rhetoric from Raymie McKerrow's groundbreaking 1989 essay inaugurating the critical rhetoric framework up to Middleton et al.'s notion of participatory critical rhetoric (PCR). I argue that ideas about criticality and participation should be expanded in the Anthropocene because the ubiquitousness of this crisis and its implications for scholarship and politics easily create awkward ambivalences when working with and in different variants of activism. After laying out my own awkwardly ambivalent research trajectory in which I involved myself in debates about right wing attacks on 'activist research' on the one hand and the work and actions of the Scientist Rebellion Nordic movement on the other, I propose that Rebecca Bryant's (2016) notion of "the uncanny present" can inform critical orientations of scholars working with environmental and climate rhetoric. Drawing on the work of Alexis Shotwell (2016) and Steven Epstein (1996), I then introduce the term 'impure methodology' as a way of actively working with the above conundrums without limiting the practice of critical participation to the one advocated by PCR. Finally, I offer a list of 'pseudo-principles' for impure methodology as inspiration for scholars of rhetoric and other fields trying to navigate global crisis.

Keywords: critical rhetoric, conjunctions, scholar-activism, scientist activism, participatory critical rhetoric

Introduction

Criticism of prevailing ideologies and consciousness is part of intellectual work, *but critique must happen in conjunction with practical political activity if it is to be relevant at all to the democratic project*. (Cloud, 2020a, p. 217)

Am I an activist? I'm genuinely unsure. In the beginning of May 2023, I found myself aboveground at the Gammel Strand metro station in central Copenhagen, meeting up with members of the Scientist Rebellion Nordic movement. I was late and missed the briefing about the direct action of the day: the *Befri Jorden (Liberate the Earth)* demonstration organized by five different climate and environmental movements to block the intersection in front of the Danish parliament to demand climate action. I greeted the scientist activists whom I'd met before. Lab coats were distributed, but I did not take one. Flags with Scientist Rebellion's hourglass logo were distributed, but, again, I did not offer to carry one, feeling uncomfortable and ambivalent about my dual position as scholar of activism and scholar activist, conscious about not being a lab coat kind of researcher at all, while also feeling shy, uncertain, awkward. I announced, however, that I had a piece coming out that day in the Danish science news outlet Videnskab.dk discussing what general shifts in the climate debate have given rise to scientists taking to the streets (Appel Olsen, 2022). If someone from the group tweeted images from the demonstration, I offered, I could send them to the editors to be embedded in the article.

I ended up taking a picture myself that was then posted on the SR Denmark Twitter profile (Scientist Rebellion Denmark, 2023), and then embedded in my popular scientific article discussing these very events. I was thus not *in* the picture, but *behind* it, or perhaps *before* it. Part of it but not part of it. I stuck around for the demo, listened to a good part of the speeches at the blocked intersection, took a few photos, talked to some friends. I went home a bit early and well before the police started arresting protesters.

In the years that I have been working on my PhD dissertation "Anthropocene Conjunctions: Scientific Ethos and Activism in the Climate and Ecological Emergency", I have been in and out of activist engagements while also examining these very engagements by other scholars and scientists. Much of this engagement has occurred more or less by coincidence, in different variants of remoteness (on Zoom, from abroad), and through my participation in debates in the media. My dissertation does not use ethnographic methods or field work in any typical sense; I rely largely on the textual production of rhetorical criticism: reading, writing, arguing, critiquing. However, my reading and writing work and the ensuing research output has happened on top of – and, in many roundabout ways, influenced by and in conversation with – the activism(s) around me.

What should I make of all this, as a scholar of rhetoric, as an activist (sort of), and as a human being concerned with various societal crises, especially that of the deteriorating biosphere? This is what I aim to explore in this essay, which is an unruly outgrowth or a 'break-away text' from the other articles of my dissertation. Every time I attempted to comment on critical methodology, on my own positionality and democratic engagements, the text mutated, took over the inner workings of those articles and started to *overflow*, causing supervisors and editors to ask for its reworking or removal in the name of length and focus. Thus, I have come to recognize that this aspect of my work, and of my life as a critical scholar, merits its own space to mutate and become the monstrous outgrowth that it apparently yearns to be.

What I hope to do is to resist arguing for a single, consistent position, or to 'set something straight'; my aim is, if not the opposite, then at least some sort of questioning destabilization of rhetorical scholarship and criticism's assumptions about scholarship, science, politics, activism, distance, embodiment, and the destruction of the conditions for life on this planet. It is a tall order, too tall to contain itself (already, I must apologize to supervisors and editors once again) - but in not less urgent for that reason. The Dana Cloud quote above has been ringing in my mind since I bought the first edition of the anthology Activism and Rhetoric (2011), back when I was an excited and exploring undergrad student in 2014. It has always had an intuitive appeal to me, and I keep returning to it in my work as a PhD Fellow wishing to do more with my scholarly endeavors than meeting the requirements of my institution and, maybe, land another research job down the line. To me, rhetorical criticism is scholarship providing knowledge of how persuasiveness works (and doesn't work) in our world, yes, but it is also *moral action* (Klumpp & Hollihan, 1989) oriented towards crisis, care, and done/undone in a certain physical and intellectual climate (Cox, 2007; Endres, 2020). In fact, knowledge-building is often an outcome of critical moral action, subverting the idea of 'knowledge first, action later (if at all)' assumed in so much university work. This assumed causality is belied by the history of science,

research, and scholarship (Daston Lorraine & Galison Peter, 2010; Duarte Regina Horta, 2016; Frickel, 2004; Kuznick, 2019; Launer, 2021; Moore Kelly, 2008; Racimo et al., 2022, pp. 8–9; Schmalzer et al., 2018) and fails to consider the co-production of science and society (Jasanoff, 2006) as well as the ways in which activist struggles have informed and enriched scholarship, especially in its critical variants in the humanities and social sciences (Cann & DeMeulenaere, 2020; Harney & Moten, 2013; Kapoor & Choudry, 2010).

I think that scholars and scientists should be open and unapologetic about the existence of these connections but also humble and explorative about the demands they put on us. Where, exactly, is Cloud's conjunction located? Does it designate a requirement to 'practice what we preach' and 'walk the talk' when critiquing power? How so? Does it mean that we must engage with democratic struggles in parallel with our scholarly work? In what, then, does the connection consist? Or should our scholarship be in situ, grounded in engagements with social movements of the marginalized and oppressed (Middleton et al, 2015)? Cloud's (2020a) originary essay, republished for Rhetoric and Activism's second edition in 2020, rests on a Marxist understanding of social progress as first and foremost a product of the organized struggle of the working class of which university-employed academics can serve a solidary role but not be at the immediate center of. I second this point. However, the case of scientist activism - broadly, the more or less organized social movement and direct action effort of scientists in their capacity as scientists – implores us to dive into conversations about struggles for progress and the role of scholars and scientists in the twin epistemic and planetary crises of the Anthropocene (Appel Olsen, in press). At the center of scientific knowledge creation, what is our role in terms of the (lack of) political action based on the knowledge created? How de we move, and where?

This essay reflects on the methodology of my three years of dissertation work by way of posing and expanding the above questions. I follow Laurie Gries' (2015) distinction between method and methodology as two separate parts of the research process: Whereas method is the specific way that rhetorical artefacts are handled in analysis using a more or less defined set of guidelines, methodology is the overall strategic approach to thinking about and attempting to understand rhetorical phenomena. I use this as a starting point to discuss the significance of the conjunctions that has shaped my research on scientist activism and scientific ethos in the climate and ecological crisis, in all its methodological impurity. That is, while the methods in my dissertation work have been fairly conventional – sometimes concept-driven, sometimes close-reading rhetorical criticism, often a mix – the overall methodology motivating, driving, and informing my research has been anything but. What has unfolded during my PhD research, and what I have attempted to embrace, is an approach that does not bind itself to predefined notions about rhetoric, science, activism, and climate, but rather "opens itself up to a world of discovery and embraces the uncertainty that comes with any new research adventure," where the scholar aims to "embrace chance, openness, and unpredictability throughout the research process, especially during early stages" (p. 98).

In the remainder of this essay, a wide range of complex questions is discussed. First, I provide an overview of the development of the critical rhetoric tradition, especially as it relates to the climate and ecological crisis. I argue that Philip Wander's (1983) account of the ideological turn in rhetorical criticism opens up an avenue for exploring the consequences for scholarly involvement in the global struggle for climate justice, which Raymie McKerrow's (1989) subsequent prominent turn from rhetorical criticism to critical rhetoric inadvertently de-accentuates. Instead, recent rearticulations of McKerrow's project in the form of participatory critical rhetoric (PCR) have sought to develop critical rhetoric by way of a focus on the critic's embodied engagement with specific movements a valuable methodological focus but perhaps also overly dominant in the critical rhetoric landscape. Second, I turn to my own research trajectory of the last three years, laying out the awkward ambivalences that I have faced in working with and in a scientist climate movement while participating in a parallel debate on right wing accusations of 'activism' in research at Danish universities. I then return to questions of crisis and critique, arguing that in the climate and ecological emergency, critical approaches ethically oriented towards crisis could be fruitfully informed by Rebecca Bryant's (2016) account of crisis as an experience of the "uncanny present". From here, I once more turn to my awkwardly ambivalent participation in the social drama surrounding my dissertation work. Inspired by the work of Alexis Shotwell (2016) and Steven Epstein (1996) I propose that the idea of 'impure methodology' can help rhetorical and other scholars make sense - or accept the inherent issues in any kind of straightforward sense-making of doing research about and within ongoing controversies and crises - of the tensions inherent to participating in unexpected ways in one's theme of study. I offer a list of 'pseudo-principles' concerning potential contributions to be yielded from thinking, writing, and acting with this idea in

mind. I propose that participation can consist in enmeshing oneself in the social drama that unfolds in unexpected ways, even as it never quite becomes clear-cut what the results of this participation will be, what kinds of methods it implies, and how it ought to make one feel. This participatory aspect of scholarship and criticism need not take the form of ethnographic fieldwork and adjacent methodical frameworks. Impure methodology not only grapples with the *how* and *why* of rhetorical criticism and critical rhetoric but also with the *where* and *when* in a consideration of the instable conditions of our time and place in the biospheric emergency facing us.

Critical Rhetoric in Critical Times

The Tower is a wonderful place to retreat, contemplate, write, and problem-solve free of more philistine concerns. It takes an unusual sense of detachment, however, having illuminated the dark rhetoric of oppression, death, deception, or destruction not to enter the fray outside the Ivory Tower. (Andersen, 1993, p. 249)

Stephen John Hartnett (2010) has laid out three phases of communication scholarship taking serious the practices of social movements. First, the descriptive endeavors of social movement rhetoric scholarship was established as a subfield in the 1960's and 70's USA. Second, a wave of communication scholars enhanced this perspective by not only seeking to *understand* the workings of protest rhetoric and activism but also to provide applicable insights aiding the attempts to advance social justice. And, finally, a third stage where "scholars build projects where they are directly implicated in and work alongside disadvantaged communities" (p. 78). This overall development is an outgrowth of several 'turns' in rhetorical scholarship during the latter part of the 20th Century and their many intersections: The "ideological turn" (Wander, 1983), the "activist turn" (Andersen, 1993), and the turn from rhetorical criticism to "critical rhetoric" (Mckerrow, 1989). Speaking here of 'turns', I do not mean to suggest that this is some kind of general tendency for all rhetorical scholarship or that these three 'turns' are clear-cut categories, but simply that they are significant developments making their mark in some parts of the scholarly community, enriching our understanding of rhetoric and our critical practices.

In the Scandinavia-based scholarly community, I do not find that critical rhetoric has been picked up as a primary research framework or that scholars generally engage in activism and movement work, even though these topics have been sporadic themes in rhetorical scholarship and education here. Furthermore, the rhetoric of science field broadly, to which my work (also) contributes, has generally not picked up these critical approaches, although, I would argue, the link would be sensible; rhetoric of science scholarship naturally deals with the climate and ecological crisis and its scientific dimensions - the same crisis spurring so much activism in the scientific community and beyond in recent years. In the same way that Phaedra Pezzullo (2016) has argued that environmental rhetoric has been unduly marginalized in rhetorical criticism, the activist and critical rhetoric currents are perhaps unduly marginalized within rhetoric of science, especially given these times where the impending biospheric breakdown is not a manageable single problem but will, in Naomi Klein's (2014) now-famous phrasing, change everything. The purpose of this section of the essay is not only to lay out the trajectories of critical rhetoric - from McKerrow's (1989) coinage of the term to recent calls for methodological inventions demanding embodied and engaged criticism (Middleton et al, 2015) - but also to show how a global biospheric emergency should lead to increased emphasis on the moral and social responsibilities for scholars of rhetoric.

In a classic essay from 1983, Philip Wander described the so-called ideological turn in rhetorical criticism thusly:

Criticism takes an ideological turn when it recognizes the existence of powerful vested interests benefitting from and consistently urging politics and technology that threatens life on this planet ... An ideological turn in modern criticism reflects the existence of crisis, acknowledges the influence of established interests and the reality of alternative worldviews, and commends rhetorical analyses not only of the actions implied but also of the interests represented. (p. 18)

At that time, Wander was writing in the midst of debates within the academic community of rhetoricians about the purpose of rhetorical criticism. Many of these discussions circled a central moral and political question of 1970s USA: the Vietnam War. Forbes Hill's (1972) (in)famous defense of neoaristotelian approach to rhetorical criticism

in his analysis and positive evaluation of a 1969 speech by president Richard Nixon on the war stands as a position opposite Wander's in this debate. Hill concluded that "given [Nixon's] target group the message should be successful in leading to a decision to support the Administration's policies" (p. 384). To Wander (1983), such an approach does not amount to criticism, but is closer to public relations consultancy. Criticism worth its name must take critical aspects of the context in which it makes its claims seriously, and scholarconsultants like Hill lacks a meaningful response to questions "such as why ignoring the murder of men, women, and children following from actions justified in public address should count as a triumph of scholarly restraint" (p. 8). Barbara Warnick (2004), a defender of Warner's societally engaged approach to rhetorical criticism, notes how Wander's 1983 essay was "widely criticized immediately after its publication" (p. 66) and then refers to a personal communication with Wander in which he, in turn, criticizes disciplinary developments in the 1980's and 90's for turning "ahistorical and text immanent" (Ibid.). To Wander, Warnick, and others, much criticism, even as it critiques power and domination, turn myopic and loses sight of its situationality as critique. The critic, then, is always somewhere, at a certain historical time and place, responding to events - also when attempting, like Hill, to apply Aristotle's guidelines for successful rhetorical performance 'objectively'.

It is interesting that although Wander talks about *life on our planet* as imperiled in the quote above (likely referring to the twin crisis of impending nuclear war and ecological destruction), climate and environmental problems have remained marginalized for decades even within the more radical circles of rhetorical criticism (Pezzullo, 2016).²⁴ One important reason for this is, I think, the specific way that McKerrow picks up Wander's call to politically engaged rhetorical criticism in his seminal 1989 article "Critical Rhetoric: Theory and Practice". As I will show in a subsequent section, communication and rhetorical

²⁴ In a more recent essay, Wander (2011) indeed does accentuate environmental destruction on equal footing with the threat of war: "[O]ur potential and irrevocable penalty for a third or fourth world war and our imminent failure to solve problems regarding the word-wide erosion of our environment is the extermination of life on the planet, rich and poor, powerful and powerless alike" (p. 427).

studies concerned with climate and environment has had its own critical trajectory that perhaps accords better with Wander's critical call to preserve threatened life. For now, I will stick to a brief overview of developments in the specific field of critical rhetoric since McKerrow.

McKerrow's article repositioned the rhetorical critic as rhetor and not merely an observer of the faculties of rhetors. In the words of Brandon M. Daniels and Kendall R. Phillips, McKerrow "made explicit the inherently political nature of the critical enterprise" (2020, p. 913). Drawing on Michel Foucault's (1992) examinations of freedom and domination "as these are exercised in a relativized world," McKerrow (1989) advocates rhetorical theory's adoption of "permanent criticism – a self-reflexive critique that turns back on itself even as it promises a realignment of the forces of power that construct social relations" (p. 91). Only by turning to such a practice of perpetual cycles of criticism and self-criticism can rhetorical scholarship free itself from its position as the eternal supplement to notions of universalized reason and rationality that it has been struggling with since Plato. According to McKerrow, rhetorical critics should resist the temptation to rescue rhetoric from Platonic accusations of irrationality and stop attempting to embrace a practical sense of *doxa* merely resulting in the unfortunate situation where such a "rhetoric of inquiry ends in description" (p. 104); a descriptive practice that will always be blind to the discursive conditions that shaped it in the first place and will possess no transformative, and hence no critical, potential. Therefore, relations of power, not 'truth' or 'reason', must become the primary theme of rhetorical criticism; it must become critical rhetoric.

However, while McKerrow agrees with Wander that critique should have an emancipatory objective, he nevertheless draws the line at direct participation and asserts that "[t]o escape the implication that what Wander desires is for academics to take to the streets," the critical rhetorician must "take refuge," like Foucault, in the role of an institutionally sited "*specific intellectual*" (p. 108). Thus, McKerrow's highly influential call for turning from rhetorical criticism to critical rhetoric actually shuns rhetorical scholars' activist efforts (at least in their more extroverted forms) in order to focus on critiquing domination and power from within the confines of the university.

When Peter A. Andersen (1993) four years later would advocate "the activist turn" in rhetorical criticism, it would be with reference to Wander but not McKerrow. Andersen

does not advocate becoming a critical rhetorician (a term he does not use) but uses another framework for engagement: He argues that the rhetorical critic ought to own up to the fact that "once a critic exposes the covert or overt ideological underpinnings of a movement, a speaker, or a policy he/she already has entered the world of the activist" and that "writing itself constitutes a form of action" (p. 248). Andersen foregrounds environmental activism specifically (alongside pedagogical praxis). As he states, somewhat dryly: "Of course it would be a pity if while engaged in our important scholarly and pedogic [sic] pursuits, the planet became largely uninhabitable" (p. 252). A main reason for at least a portion of rhetorical scholars to also work outside the "Ivory Tower" would then be the fact that "the integrity of the academic institution itself, our lifestyles, indeed our very lives themselves may depend on many of us attempting to solve real political and social problems" (Ibid.). In broadening the scope of social struggles to encompass the struggle for life itself, Andersen emphasizes Wander's call to work against vested interests threatening life on this planet in a way that McKerrow did not. It is not that McKerrow would be opposed to engaging in such a struggle. However, his emphasis on being a "specific intellectual", struggling with (and in?) texts at campus, might have steered critical attention away from such globally overarching problematics as climate and environmental devastation. Kirt Wilson (2020) likewise draw on the tradition for specific intellectualism in the academy in his functionalist perspective on theory/criticism relations in rhetorical criticism. Wilson astutely notes how we must always recon with being situated in a historically specific university setting, stressing how "critics work in a situated local space", wherefrom they must face the challenge of "how to negotiate their lives across the different locales they inhabit" (p. 281). This is an important challenge to grapple with. At the same time, we must also ask, against the orientations towards specificity offered by McKerrow, Wilson, and other, how to deal with the radically non-local aspects of climate disaster dispersed overwhelmingly far across space and locality as well as across the past, present, and future.

Looking back at these discussions in 1980's and 90's rhetorical scholarship in the US, it seems that it has not been Andersen's account of leading a "double life" (p. 249) as activist and scholar and his investments in environmental struggles that has mainly influenced politically engaged rhetorical scholarship since Wander's ideological turn. Instead, it has been McKerrow's critical rhetoric that "has been articulated and rearticulated numerous times across its 30-year history" (Daniels & Phillips, 2020, p. 914).

It has been incessantly challenged, often with the accusation that its focus on theorizing power and domination ends up becoming self-referential (Cloud, 1994; Daniels & Phillips, 2020, p. 917; Ono & Sloop, 1992). Cloud (1994) defends a materialist ideological rhetorical criticism in the face of McKerrow's poststructuralist approach. The latter, Cloud argues, either sees reality as wholly textual/discursive, thus committing to a relativism that would render the grounds for critical judgement obsolete (a relativist rhetoric), or sees discourse as the sole materiality of our social reality, thus on many occasions becoming unable to critique actual suffering as caused by a larger oppressive political and economic reality (an idealist rhetoric). Cloud places McKerrow alongside Michael C. McGee and others in the former relativist category and argues that this stance leaves the critical rhetorician at a dead end: "In the acceptance of a relativist world view, a critical rhetoric that loses sight of the material realm threatens to render critical judgement inconsequential" (pp. 157–158). Cloud reflects on McKerrow's influence on rhetorical criticism and her own evaluation of it (acknowledging her earlier essay's polemical streak) in a more recent article (2020b, p. 834). Here, Cloud suggests that Gramscian and other Marxist perspectives on the critical rhetorician's enterprise would be more useful to critical rhetoric than Foucaultian frameworks like McKerrow's because they "not only afford critics a view of the relations of domination in capitalist society and their ideological justification; they also urge theorists and critics to look to history to discover the conditions of possibility for freedom in real, material circumstances" (p. 845).

Again, this materialist perspective, with which I largely agree, could serve as reentrance to the Wander's original call to identify and actively work against the lifethreatening fossil economy and its enablers. A significant recent rearticulation, however, of McKerrow's project is participatory critical rhetoric (PCR), as first championed in Middelton et al.'s groundbreaking *Participatory Critical Rhetoric: Theoretical and Methodological Foundations for Studying Rhetoric* In Situ from 2015. The authors urge critics to get closely involved with the phenomena under critical scrutiny, and thus to "stand with, for, and among the people whose rhetoric we study" (p. xiv). This turn in critical rhetoric takes its point of vantage in the critic's own body as it finds itself actively engaged in activist struggles in order "to investigate live(d), locally situated rhetoric in its immediate manifestation" (p. xv). In PCR, materiality becomes not just a question about on what level of social reality rhetoric *works* but also about the epistemological conditions of the critical rhetorician *at work* as "critics' bodies can add to and alter how they interpret rhetoric" because they "are present as rhetoric unfolds" (pp. 60 and 61 respectively). Like other scholars attentive to issues of positionality within power structures, Middleton et al. note that "it is important to consider the role that critics' bodies play in perpetuating some forms of power" (p. 70). They go on to advocate their PCR approach in order to avoid the risk of critical paralysis inherent to McKerrow's Foucault-inspired circular critique of domination and freedom as pointed out by Ono and Sloop (1992). The authors' more recent reflections on PCR methodology (Hess et al., 2020) scrutinizes the ethics of privileged positionality further, informed by studies on subalternity, engaging productively with criticism of PCR from decolonial scholars of rhetoric. Instead of pushing back against the decolonial critique they accept the challenges it poses and state that the "unresolvable tension" (p. 877) it fosters for PCR should be seen as inherently productive.

Middleton et al.'s primary focus in their development of PCR is thus on the materiality of the critical scholar's body and its material constraints and affordances to criticism, especially PCR creates ethical problematics in terms of working with and for disadvantaged social groups. The omnipresence of the crumbling materiality of a biosphere in deep crisis, then, naturally receives less attention. Others, however, have sought to unite these perspectives. An important article in critical rhetoric's investments with environmental matters specifically is Michael Salvador and Tracylee Clarke's "The Weyekin Principle: Toward an Embodied Critical Rhetoric" from 2011. Salvador and Clarke urge the critic to rethink material relations to the non-human world when engaging in rhetorical practices of criticism. They put forth their "weyekin principle" inspired by the lore of Nez Perce Native Americans: "The weyekin principle holds that in advancing an embodied critical rhetoric the researcher attends to the corporeal experience of the nonhuman world so as to articulate the symbolic-material tensions obscured by predominant systems of meaning" (pp. 248, emphasis in original). The enhancement of environmental communication scholarship provided by the Weyekin principle, the authors argue, is that critical rhetoric can become more attuned to the sensuous materialities of the environmental conditions studied and engaged with. As I will return to, orientations toward the nonhuman plays a role in recent discussions on climate and environmental rhetorical criticism (Endres, 2020). For now, I will note that this reconfiguration of critical engagement towards the body draws on McKerrow's (1998) own later considerations of corporeality in critical rhetoric, and can
be seen as a specifically environmental spin on the general rearticulation of critical rhetoric as embodied and engaged, later culminating in PCR's methods and methodology. This orientation towards the corporeal has been a general, and much needed, development in rhetorical criticism specifically and the humanities generally. It has spurred methodological and theoretical conversations about text, context, and the critic's position (Gottschalk Druschke & Rai, 2018; McKinnon et al., 2016), and PCR has been deeply implicated in turning the critic's attention to the embodiment of critique.

I will return to the questions of crisis, criticality, and time. In what follows, I turn to the participatory aspects of my own work, the specificities of which raise a number of questions. Does a critical rhetorical practice concerned with social movements and their struggles imply methodological foregrounding of various (auto)ethnographies and field methods (Gottschalk Druschke & Rai, 2018; Hess, 2011)? If we accept the relevance and importance of the *function* of critical rhetoric but not its insistence on site-specificity underpinning McKerrow's critical rhetoric as well as PCR (in as far as the specific site here is the body of the critic and/or the social movement in which the critic inserts themselves), what, then, can the critical rhetorician contribute to social movements' challenge to hegemony? Put differently, is there a way for the critical rhetorician to actively, intellectually engage in movements without always 'moving closer' to the 'site' of marginalized groups and/or the non-/more-than-human?

Awkwardly Activist Academic: My Ambivalences

By imagining rhetorical scholarship as part of the ongoing process of social drama, when do we decide to stop researching and to start writing or publicizing our work? (Pezzullo, 2016, p. 183)

[T]he arguer's praxis should involve risk of self. This might mean recognizing that what the critic discovers in the course of her work may be unexpected, that she may encounter audiences that remain ambivalent and indifferent to her work, that the issues she addresses may be unresolvable, and, most important, that she herself may be changed in some fundamental way as part of the critical process. (Warnick, 2004, p. 68)

I enrolled in the PhD programme at the University of Copenhagen in September 2020. According to my application's project proposal, I set out to explore "the institutional ethos of science in a rhetorical-critical perspective" – a broad, perhaps even vague, ambition. In the project description, I suggested that I would be looking at a very diverse range of artefacts, from the letters of Copernicus and Albert Einstein to the March for Science movement. It is expected (and fundamentally inevitable) that a PhD project will alter at least some of its aims and objectives during the research process as the Fellow reads into the literature, receives peer feedback on central ideas, and engage with empirical data or artefacts for analysis. The specific trajectory of my project is no exception. However, in some ways, it went further – or if not exactly further, then in other, unexpected directions – than the dialectic between posing ideas and then revising them in the confrontation with other ideas. My dissertation process ended up becoming entangled with academic activism, or activisms, on several levels, independently of my 'internal' research process as outlined in my PhD plan, in ways that I could not have predicted.

Thus, the question quoted above, posed by Phaedra Pezzullo in her afterword to the *Text* + *Field* anthology (2016), speaks to my scholarship's processual problematics. During the first year of my enrollment, a social drama of a debate about 'activist research' started to unfold in Danish media on the one hand, relating mostly to humanities and social scientific scholarship dealing with gender, race, and religion; a debate in which I participated myself in op-ed pieces, radio interviews, on social media, and in open letters. On the other hand, I got involved, albeit somewhat peripherally, with the Scientist Rebellion movement in the Nordic countries. My research project became then, in a sense, hijacked by its contextual circumstances. It was somewhere in the middle of all this that I realized that my project was developing in conjunction with current affairs and movement work in ways that was perhaps productive, although quite difficult. Constantly stopping and starting my research within this social drama, I have ended up – though still underway – with a strong, but awkward and ambivalent, link between my scholarship and the democratic project of climate and ecological struggles and the struggle to preserve critical scholarship at Danish universities. What follows is a brief outline of these entanglements.

Early on in my enrollment at the University of Copenhagen, I founded a small interdisciplinary network for PhD students working with climate change in some way or another.²⁵ We held sporadic meetings and seminars sharing experiences and knowledge from our fields. During a Zoom meeting with this group (I started my enrollment in the midst of pandemic lockdowns), I was alerted to the existence of an activist network of scientists and scholars at Danish universities that was going to have a start-up organizing meeting. I thought it would be interesting to participate (scientist social movements being, at that point, one part of my proposed material for analysis), but had no research agenda with my participation as such. At these meetings, we discussed many issues relevant to my dissertation work: the role of scientists in society (thereby touching on rhetorical scientific ethos), scientific activism, and the political and moral imperatives of climate science and knowledge today. Given my research topic, I was also asked to do a short presentation on scientist activism historically at one of the early open meetings.

I stuck around for about a year, which meant that I was also present at the meetings about organizing this group's (that would become Scientist Rebellion Nordic and, most recently, Scientist Rebellion Denmark) first direct action: a teach-in demonstration at the stairs of the Climate Ministry in Copenhagen. However, I did not participate in the teachin myself as I was abroad on a mandatory change of research environment at the time of its execution. Thus, I had been part of discussions about activism at the Zoom meetings but found myself in another time zone far from the action in October 2021. Instead, I gathered the media coverage of the event in Danish and Swedish media from the day of the teach-in and the next couple of days and then shared the list with the group. I ended up using this material later on in a research article for my dissertation, now published in the Nordic journal for rhetorical studies *Rhetorica Scandinavica* (Appel Olsen, in press). My rhetorical critique does not use the teach-in itself as material for analysis since I did not participate on the day, but looks at the way it was relayed and circulated in the media and how scientific ethos became a contested matter in national news. Still, my initial gathering of the material was sparked by my engagement with these activists, not by predetermined research objectives. This, in turn, helped me to start focusing my overall project on scientist

²⁵ Co-founders of the Network for Interdisciplinary Climate Change Knowledge (NICCK) were Andrea Veggerby Lind and Søren Damsbo-Svendsen.

activism more specifically, and not just 'the institutional ethos of science'. Although I stopped participating in the organizing group's regular meetings during my research stay abroad and afterwards, I maintained contact with the SR Nordic activists, which have resulted in my co-authorship on the article "The Role of Life Scientists in the Biospheric Emergency: A Case for Acknowledging Failure and Changing Tactics" (Racimo et al., 2022). As the only non-life scientist on the list of authors, I contributed with some knowledge about scientist activism historically and today. I have also offered to present and share my research on scientist activism with the movement after finishing my PhD. Most recently, a UCPH colleague, whom I also know through SR organizing activities, and I argued in an op-ed in the Danish newspaper Information that researchers should engage politically, especially in the climate crisis (Ejsing & Appel Olsen, 2023), responding to another colleague insinuating the opposite (Nicolaisen, 2023).

Throughout my engagement with the SR movement, I neither relied on a predetermined strategy to link it to my research, nor did I ever quite fully commit to an identity as a member of the movement. There were many reasons for this – a longer spell of depression robbing me of confidence and enthusiasm needed to commit to activism, my general uncertainty about what I could contribute as a rhetorician and a so-called 'junior scholar', and other life and career circumstances such as the stay abroad, to name just a few. This strange connection, primarily via Zoom, has been and continues to be a tension in my scholarly life – and I feel quite awkward about it, as my supervisor Kristine can attest to after our many conversations on the matter.

Another, quite different, meaning of the concept of academic activism was at play parallel to all this. Also not long after my enrollment, a debate in Danish media about 'activist research' was sparked by right wing pundits and politicians 'revealing' that Danish universities were housing 'activist' researchers working with gender, racism, colonialism, and other topics unpalatable to the conservative mind, sometimes using the tools of feminist, queer or Marxist scholarly traditions – in many ways a traditional reactionary culture war trope of the left-leaning universities. A result of the polemic was a debate in the Danish parliament and the passing of the V137 proposition "against exceeding activism in academia" (Dahl et al., 2017). Many in the academic community pushed back against this ideologically motivated stigmatization in various ways. I will not rehash these accusations of 'excessive activism' here as my point is not that they were interesting or thoughtprovoking on their own merits (they were not). Rather, I want to point to the senses in which this debate had an impact on my research process as I sought to intervene in the ideas being developed against radical, and even some non-radical, aspects of academia. Again, drawing on Cloud's essay (2020a): "We must defend ourselves, too, when the right mounts increasingly virulent attacks on academic freedom" and "fight the battle of ideas as well as the battles in our workplaces and the streets" (p. 219).

Seeing the obvious intersections of this discussion about academic 'activism' as posed by the pundits and the scientist *activism* actually happening on a different area of study, the climate and ecological crisis, I sought to intervene in the debate, most notably via two commentary articles at the science news site Videnskab.dk (Er der virkelig en skarp modsætning mellem aktivisme og videnskab?, 2021; Ville forskningsministeren fyre Einstein?, 2021). In the first, I took aim at statements from the Social Democrat Minister of Education and Science at the time, who seemed to support the 'anti-activism' stance but did not provide any explanation of what she meant by activism or why it would be bad for research. I speculated as to what she, and the right wing politicians whose viewpoints she seemed to cater to, might actually mean by "objective" research that is "not activist". Using the examples of treatment activists of 1980's AIDS science (Epstein, 1996) and the field of PCR, I argued that it is far from obvious that activism is bad for science - indeed, it can be demonstrated that activism is often productive to scientific and scholarly endeavors. I elaborated further on this in the next Videnskab.dk article, where I pointed to the political engagement of physicists in the nuclear arms race of the cold war (Moore, 2008; Nusbaumer, 1996) and Karma Chávez's (2018) work with counterpublic enclaves in migrant and queer social movements at the Arizona border to argue that activism and research can have a productive relationship in a number of ways. These articles drew on my early literature searches and reading work in connection to my dissertation to make critical points about the intersections of activism and scholarship. Mainly, however, it was the other way around: My research and writing for the op-ed pieces reacting to the public debate would come to influence my dissertation's trajectory. My science communication practice has thus led me down a certain path, helping me focus my project and giving it extra urgency in terms of the social drama in which it is situated. The social drama, then, is not simply a background upon which my research unfolds; it unfolds with and in it. I am both taking the photograph and finding myself in it. Perhaps this could be characterized as

fieldwork. Such a characterization, however, would require a vast expansion of the meaning of the field as such. Better, I think, to expand the meaning of *participation*.

In the field of rhetoric, I am not alone in this uneasy feeling of finding oneself in the midst of conjunctures of social, political, and scholarly realities. Erin Rand (2014) has written eminently about how her participation in the movement she studied "was marked by an awkward, but nonetheless productive, ambivalence" (p. 30). The reasons for these awkward ambivalences are different in Rand's case from mine - less is at stake for me in getting involved with scientist activist movements than for Rand in her participation in LGBTQ training sessions at Camp Courage. Still, I find Rand's point about the productivity of ambivalence in participatory critique worth exploring in my case also. Indeed, I already have been exploring it, first unconsciously, later with more awareness. Although awkwardness and ambivalence intuitively invites negative connotations - especially, perhaps, in academia where we are expected to be clear-headed, determined, defending our arguments rigorously against any assault - Rand offers a different perspective in pointing to their productivity. Something happens within the ambivalence and awkwardness of the social dramas in which academics can sometimes find themselves; will always, at some point, find themselves. These events can, and do, become the ground for knowledge-creation and novel critical perspectives.

Stephen John Hartnett (2010) has implored the rhetorical critic to foster a "joyful commitment" in activist undertaking, cultivating a scholarly and personal fulfilment in solidarity with others. I have been committed to debates and movement work, engaged in issues that I find extremely important; however, although it has been meaningful, it has not exactly been *joyful*. Being in the picture but not in the picture is an unsettling, uncanny position to occupy. Constantly working with and in the democratic conjunctions of climate, science, and activism has honestly been more ambivalent than fulfilling. Below, I explore this positionality by returning to the questions of criticality and crisis in rhetorical criticism as these concepts imposes themselves with special urgently in the Anthropocene.

Crisis Critical Rhetoric

How do we find our ethical bones? (Orange, 2016, p. 110)

Robert Cox's seminal 2007 essay in Environmental Communication answers in the affirmative its title question, "Does Environmental Communication Have an Ethical Duty?", thus placing this area of study alongside conservation biology and other "crisis disciplines". In considering practices of communication as essential in the task of working through environmental issues, Cox argues, communication researchers and rhetoricians bear a responsibility to look into and advocate ways to aid sustainable policy efforts and counter attempts to capture and distort the conversation of corporate (self-)interests and other malicious actors.

This ethical imperative has certainly not waned with time. As Joshua Trey Barnett asks in a recent essay in Rhetoric & Public Affairs, arguing for an "ecocentric rhetoric": "What obligations ... do scholars of rhetoric and public address have to understand and to sustain the conditions of earthly coexistence?" (2021, p. 366). Danielle Endres (2020) has also contributed immensely to this discussion in picking up Cox's proposal of a conscious orientation towards crisis and supplemented it with a "care orientation". With a more substantial accentuation of climate crisis alongside the ecological crisis, Endres depicts such a crisis/care orientation in environmental rhetorical criticism as having "a pragmatic, ethical, and sometimes political bent to environmental criticism that is often less apparent in other forms of rhetorical criticism" (p. 5). Endres imports the care element of this critical bent from Pezzullo (2017): "This means we have not only a duty to prevent harm but also a duty to honor the people, places, and nonhuman species with which we share our world" (p. 11). This orientation for rhetorical scholarship plays into broader discussions of ethics in times of environmental crises times (Gardiner, 2011; Orange, 2016; Puig de la Bellacasa, 2017). As Donna Orange, quoted above, searches for "our ethical bones" in the morally and materially devastating Anthropocene, she reveals in her metaphor the sense of a lack of structure underpinning moral action in today's uncertain and unpredictable world. Endres' call for a crisis/care orientation for environmental rhetorical criticism is a welcome invitation for skeleton-building within our discipline, a spooky but necessary project in rhetorical criticism and the environmental humanities broadly.

As shown above, critical rhetoric scholars have carried similar ethical and political implications to the forth prior to Cox and Endres. Indeed, James Klumpp and Thomas Hollihan (1989), writing in the same year that McKerrow inaugurated his vision for a critical rhetoric, foregrounded moral action in rhetorical criticism. According to them, this development had been underway since Wander, McGee, and others as "the contemporary critic approaches morality as a quality that inheres in rhetoric, and in criticism as rhetoric," casting the critic as "a moral participant, cognizant of the power and responsibility that accompanies full criticism starting in the 1980's has not tended to tie their critical project to a specific thematic domain of study such as climate or environment struggles. Although these approaches can and are thought together, I think that one could also read Cox, Endres, Pezzullo, and other crisis/care oriented rhetoric and communication scholars as picking up on Wander's call five decades ago to struggle against "politics and technology that threatens life on this planet" in ideologically conscious critical rhetorical scholarship.

I think that a critical and engaged rhetoric merging all these approaches is needed to live up to our ethical duty as rhetorical critics, not least as we find ourselves situated within powerful university institutions (although rarely with a feeling of power and agency within these). However, I want to suggest that we would benefit from some additional work on our concept of crisis informing our orientations and expand our focus to better account for less 'local' senses of time and place. To do this, I suggest that we look to anthropologist Rebecca Bryant's (2016) work on the experience of living in critical times. Specifically, Bryant's notion of the "uncanny present" as a temporal condition in a time of crisis is enlightening and speaks to the above account of my awkward ambivalences as an 'activist' scholar.

Building on interviews with citizens in Cyprus, an island nation politically torn between a Turkish-majority north and a Greek-majority south, Bryant reflects on what constitutes the sense of crisis in which these people live out their daily existence, and on the specific temporal positionality of this lived experience. The uncanny present, she suggests, designates the moment when the present "becomes anxiously visceral to us as a moment caught between past and future" (p. 20). In times of crisis a "critical threshold" is crossed, moving the individual perceiving the crisis to experience the unsettling feeling of being "outside ordinary time" (Ibid.). Although Bryant generalizes from a very different case, the ramifications for climate and ecological crisis times are obvious. In many senses, the familiar has become strange in our current historical planetary moment (Chakrabarty, 2021). In the looming shadow of the ecological future to come (Morton, 2010), following a recent past with decades of aggressive extractivism and climate-altering industrial emissions, our actions as citizens, as consumers, as political beings, as bodies and psyches, as living matter and thinking creatures, as scholars and activists, as well as our way of thinking past, present, and future diachronically, are becoming undone. In other words, our social and political realities are infused with a sense of existing at a temporal crossroads, a defining and depressing conjunction in the here and now. The present is foregrounded *as* present; it becomes aggressively de-invisibilized.

Thus the uncanniness of being alive now. This uncanniness is ultimately produced in moments of crisis by "the inability to anticipate the future" (Bryant, 2016, p. 21; see also Bryant & Knight, 2019). As French philosopher Michel Serres' (2014) argues in his essay Times of Crisis, crisis designates a sort of crack in a continental plate from which we cannot go back and which will change the landscape that living beings will inhabit in the future. That human civilization has opened up this irreversible crack is the basic meaning of the Anthropocene (Lewis & Maslin, 2018) but this era presents a double-bind or loop: the condition of the biosphere is dependent upon human activity, but we are also dependent upon the health of the biosphere (Serres, 2014, p. 28). The severity of a crisis, according to Serres, depends on the length of the historical period preceding it. No matter how we may choose to think of the temporality of the climate and ecological crisis' past - as starting with 17th Century colonialism (Ghosh, 2021) the invention of the steam engine (Morton, 2010), the rise of fossil capitalism in European early industrialism (Malm, 2016), or "The Great Acceleration" since the 1950's (Lewis & Maslin, 2015, pp. 176-177) - the stakes are massive and the future unpredictable, fueling the uncanny feeling of living in the midst of destruction already present but also yet to come. To quote ecologist Andreas Malm's (2016) powerful formulation of this temporal confrontation: "Wherever we look at our changing climate, we find ourselves in the grip of the flow of *time*" (p. 7). Confronting a future so disastrously affected by the fossil economy in the past reaching up till the present, we witness the "falling in of history on the present" (p. 9).

Returning from these somewhat lofty reflections on crisis and temporality to my awkwardly ambivalent work with scientist activism in the climate and ecological crisis, I

argue that scholarship dealing with this theme is inevitably productively complicated by the uncanny present in which this research takes place. Finding oneself both outside and in time – like being outside and inside a photo, this freezing of a single moving moment – any attempt at answering Pezzullo's question of when to stop and start writing is destabilized. This is not (at least not only) due to the corporeal immersion of the scholar of critical rhetoric. It is also about time and the lack of certainty in navigating the borderlands of engaged scholarship looking into a wildly uncertain future. In this sense, we are not necessarily closer to the rhetorical processes we study because we go into the field and move our bodies closer to certain rhetorical processes as they unfold. Participation in the uncanny present of climate and ecological destruction can be *in absentia* as much as *in* situ. Indeed, it often must be - that is, if we are willing to here consider in absentia as not meaning 'being absent' from the action as such (an impossibility, since we are all always already situated in the biosphere) but as a way of challenging the intuition of PCR that critical participation calls for in situ ethnographic closeness on the methodological and methodical level. Caring for the biosphere – ethically, socially, politically – will often mean cultivating solidarity from afar and across time and space.

In the following part of the essay, I bring these reflections back to the question of methodology. Although some might accuse me of making a general point about the engagement and political immersion in public life that critical rhetoric and PCR have already established, I will offer some pointers as to how consciously working with what I call impure methodology in the rhetorical critic's research process can infuse our work with new perspectives on our positionality in the uncanny present of the Anthropocene.

Impure Methodology

To be against purity is ... to be against the rhetorical or conceptual attempt to delineate and delimit the world into something separable, disentangled, and homogenous. (Shotwell, 2016, p. 15)

Although I was familiar with PCR and other participatory approaches prior to my participation in the debate on 'activist researchers' in the spring of 2021, I started reading deeper into the subject in my argument construction against right wing attacks on critical research. This review of PCR literature, in turn, formed the backbone of my discussion of PCR methodology in this essay. Generally, I have kept returning to how the very different understandings of 'activism' – one pertaining to scientists taking to the streets and then one mostly serving as a derogatory label for research with insufficiently conservative assumptions and lacking fidelity to skewed ideals of objectivity that these assumptions promote. The presence of such a debate shows how the modern university is always subject to negotiation of scientific norms.

This influence from the social drama of several debates running parallel - unfolding conjuncturally - with my scholarly work cannot be categorized as autoethnography, field work, or similar methodologies informing PCR's take on the critical rhetoric paradigm. It is ethically oriented and participatory, yes, but not in the embodied sense promoted by PCR. Further, PCR and other activist communication scholarship approaches tends to, quite reasonably, focus on aiding and assisting marginalized and oppressed groups. The climate and ecological crisis is rooted in inequalities, and the people who have contributed the least are the first to suffer the most (Felli, 2021; Huber, 2022; Jasanoff, 2018; Nixon, 2011; Oswald et al., 2020; Sultana, 2023). In this sense, the focus on marginalization is indispensable. However, a phenomenon such as scientist activism is not comfortably encapsulated in the activist scholarly ambition "to work with and for oppressed, marginalized, and underresourced groups and communities" (Carragee & Frey, 2016, p. 3975). In the climate and ecological struggle specifically, scientists are obviously not representing socially marginalized groups as such (although individual scientists may belong to these) or any version of the working class majority. As Matthew Huber (2022) points out, scientists and researchers are part of the relatively small class of professionals who are at the moment - in lack of a broad and organized working class resistance - at the center of progressive climate politics. They/we are very much incapsulated in the societal layer of middle-class academics that Dwight Conquergood (2002) counts as part of the powerful textual community for whom "reading and writing are central to their everyday lives and occupational security" (p. 147). PCR scholarship, as well as theories of vernacular rhetoric, often draws upon Conquergood's challenge to "textocentrism" (it is central to Middelton et al.), and for good reasons - we risk perpetuating harmful structures of domination if we disregard non-textual, non-verbal, non-archived rhetoric as legitimate critical objects.

Nevertheless, engaging with scientist social movements is still a meaningful endeavor in the climate and ecological crisis, and as a rhetorical phenomenon, it merits critical attention in a participatory framework. This is so partly because of rhetorical scholars' proximity to the work of such movements. We, too, are embedded in university structures, with a special relation to knowledge production: "In a sense, even our academic skills make us part of the power elite" (Andersen, 1993, p. 255). Again, Cloud (2020a): "[S]tudents, intellectuals, and those not so clearly positioned as workers often stand on principle in solidarity with those fighting for economic, racial, gender, and sexual justice" (p. 220). That is, scholars of rhetoric face similar questions of moral investment and political responsibility in a time of crisis as scientists do: What is our relation to the rest of society? Should we find radical ways to move outside of our institutional settings to push for the changes needed for a just green transition? Here, Wilson's (2020) version of the rhetorical critic as specific intellectual comes to its right. But, perhaps, it needs radicalization: Community-dwelling in our local circumstances does perhaps not quite cut it in the worldwide distribution of the climate and ecological emergency. Just as C. Wright Mills (1958) argued that intellectuals, scholars, and scientists "must reason and investigate and, with their passion to know, they must confront the situations of all men [sic] everywhere" (p. 130) during the Cold War arms race, the knowledge worker today still faces this impossibly universal imperative.

Furthermore, middle-class professionals in general do carry responsibility in terms of moving society forward – we should not leave this task to underprivileged groups and then, at most, attempt to prop up their efforts with our expertise; or worse, stranding in a liberal politics of recognition of the subaltern subject while doing little to build actual momentum for deep policy change through the class structures in place (Huber, 2022; Velicu & Barca, 2020).²⁶ This goes to the heart of a point that I make throughout my

²⁶ Denmark is a case in point in terms of the problematics of looking to marginalized nations and peoples in order to 'assist' them. Our own house, so to speak, is in radical disorder in terms of climate emissions and environmental issues – and in spite of a professed image as a 'green frontrunner' nation, our climate policies are not only insufficient in terms of complying with the Paris Agreement, it is also ethically bankrupt

dissertation: Scientists and scholars must recon with our communities' own investments and problematics in the climate and ecological crisis and not just hold up 'Knowledge' or 'Truth' as shields to criticism. Once more, Cloud (2020a), echoing Mills' call for political involvement from intellectuals: "Risks are inherent in political life, and scholars are often in a position to take them" (p. 221).

However, although knowledge work can never be 'depoliticized' - indeed, "such purism is impossible" (Brown, 2023, pp. 60-61) - we should also be weary of reducing science to politics, or vice versa. Claiming that science is politics would be reinstating a purism mirroring crass scientism in reverse – but a purism nonetheless. In her genealogy of energy and the politics of work, Cara Daggett (2019) refers to Karl Marx's The German Ideology (1978) to remind us that such purist delineations usually function to uphold the material dominance of elites: "Just as there were not 'pure ideas' floating free from their historical material context, there also could be no 'pure' science" (Daggett, 2019, p. 7). In the words of Marx (1978): "Even this 'pure' natural science is provided with an aim, as with its material, only through trade and industry, through the sensuous activity of men" (p. 171). We may then think of science, research, and scholarship as neither a detached realm of Knowledge nor as "politics pursued by other means" (Latour, 1983, p. 168) but as a human activity unfolding at a certain time and a place, always situated within and reacting to political life bur not reducible to it. Knowledge-work is necessarily impure (Epstein, 1996) and thus in constant mutually productive/destructive relation to other sociopolitical fields of activity (Jasanoff, 2004, 2006, 2010).

Technical and public spheres interpenetrate each other, to be sure, but we should neither fear their colonization of one another (Goodnight, 2012) nor their total separation. Instead, there are productive powers to be harnessed in the unstable intermingling of separate yet related arenas of production. In this ambivalent relation between scholarly and socio-political context, a research design is not established prior to participation in order to be adhered to with methodical stringency. Instead, research designs come into

considering the brunt less wealthy nations are bearing as a consequence of global warming (Tilsted & Bjørn, 2023).

shape in unpredictable engagements with current affairs. This engagement is the backbone of my interpretation of Cloud's critical conjunctions, making it the outcome of Gries's (2015) call to embrace chance, openness, and unpredictability throughout the research process in climate and science politics specifically.

I propose to call this approach to critical conjunctures of rhetorical scholarship unfolding within social drama impure methodology. In doing so, I draw on my dissertation process described above and relate it to two accounts of impurity: Steven Epstein's sociological account in *Impure Science: AIDS, Activism, and the Politics of Knowledge* (1996) and Alexis Shotwell's (2016) critique of purist metaphysics in Against Purity: Living Ethically in Compromised Times. Shotwell does not deal with science specifically but more fundamentally with the "metaphysics of purity," that is, the naïve idea that we can act outside of the web of suffering that modern life on Earth has woven. The problem with purist metaphysics is that it "shuts down precisely the field of possibility that might allow us to take better collective action against the destruction of the world in all its strange, delightful, impure frolic" (pp. 8-9). Shotwell's book has been an inspiration for me for years, and in the same way that I have been returning to Cloud's conjunctions, I have been drawn to the honest impurities in Shotwell's take on ecology and ethics. As scholars, we are in deep trouble alongside everybody else and have to work from there, not from the fantasy of our detachment. The separation of science and society, of rhetorical criticism and social drama, does not hold up to scrutiny in the biospheric emergency, if it ever did. It also cannot be reduced to 'mere politics'. Thus the uncanniness of the climate and ecological crisis – by definition, we cannot ever truly find our ethical bones, or, our bones are constantly both growing and crumbling in the fires of the Anthropocene. Strange but true.

Epstein's account of the science-activism intersections in the 1980's AIDS crisis in the US (an account that I also referred in my argument against 'anti-activism' in my Videnskab.dk op-eds) helps us understand impurity as productive to research in a politically heated environment marked by crisis. An extensive study of treatment activists in the AIDS crisis, *Impure Science* eminently pinpoints how rigid, 'purist' notions of 'inside' and 'outside' of science is inevitably challenged in political and scientific crises. He notes how "Conventional views of science presume a top-down model of knowledge dissemination. True ideas originate within a select community of educated specialists; from there, they percolate 'downward'" (p. 141). Epstein challenges this 'trickle-down causality' in 'harder' scientific fields, medicine and epidemiology, where activists and social movements were able to influence and aid the institutional production of knowledge in the AIDS crisis. Upending this causality implies the inherent 'impurity' of the politics of knowledge: Especially in times of crises, we should not assume that the researcher's hermitical work 'comes before' the social and political phenomena it seeks to understand. As Donna Haraway (1988) has argued, knowledge creation is always already situated somewhere. Viewing all knowledge as situated means acknowledging "that knowing and thinking are unconceivable without the multitude of relations that make possible the worlds we think with" (Puig de la Bellacasa, 2017, p. 69). This multitude of relations imply not simply loving connections but also relations of controversy and dissensus (p. 78).

In Epstein's account of the AIDS controversy, this situatedness is shown in its productive complexity in which "a highly public and somewhat 'open' field has been the site of incessant struggle, negotiation, cooperation, and interaction among a variety of individuals, institutions, and organizations" (1996, pp. 170–171). 'Softer' fields of scholarship such as the humanities are of course not exempt from this political dynamic. As professor in intellectual history Mikkel Thorup (2022) has argued in a recent essay reacting to critiques of the humanities in Denmark, the humanities are blessed with having cultural products as our research objects because working with these objects can make our research highly relevant and relatable to many people since we are all consumers and creators of culture. At the same time, this very fact can be a curse that invites misunderstood criticism of research, at times aggressively so – exactly because cultural phenomena are something everyone has a relation to and therefore strong feelings about, which can sometimes lead to challenging humanities researchers' expertise and motivations in misguided ways. Working in any scientific field, the humanities included, we are never actually removed from social, political, and planetary contexts. We are in them, and they shape our world in as many astounding and strange ways that we may shape them. The starting point for creating knowledge and critique in this mess is inevitably impure in both Epstein's and Shotwell's sense. I think the critical rhetorician can gain a lot by consciously starting from there.

Some rhetorical scholars have made inroads into conceptualizing impurity. Notably, in his essay on Todd Hayne's 1995 film *Safe*, Joshua Trey Barnett (2017) shows how this

movie invites the audience to understand the film's main character, and by extension themselves, as part of an ecological mess of relations: "Earthly coexistence is impure: to live on Earth is to engage in messy forms of relationality that cannot be completely controlled, cleansed, or purified" (p. 203). Although Barnett uses this ontological stance for different ends, I would suggest, drawing on Shotwell and Epstein, that these impurities have ramifications for science and scholarship as well. Furthermore, it has ramifications for how to think and do methodology in critical rhetoric today. I take impurity in rhetorical scholarship concerned with activism (in several senses and on multiple levels) to be a condition of inevitable immersion in the "web of life" (Moore, 2015) without this implying a complete ontological levelling of this web. This, at its core, is what I suggest should be understood by the conjunctural in rhetorical criticism in the Anthropocene: a non-banal entanglement and incessant dialectic of practices in knowledge production and political life that we will never work through but must work *in* and *with*. Critical methodology is not only a question of the *how* and *why* of research, but also the *when* and *where*. This, I concede, opens up a lot more questions than it answers.

One way to respond to this inevitably impure situatedness is through the methodological strategies of PCR. Engaging in and with social movements or other rhetorical phenomena that we may study, placing our bodies in physical proximity to more-than-textual contexts of social life, has been a much needed innovation of rhetorical scholarship too often too occupied with the 'great speeches' of 'great men'. This essay is not anti-PCR in any sense, and I certainly do not regard PCR as 'purist'. However, looking back at the awkward and unpredictable, but nonetheless essential, tracks of my research on and in scientist activist movements in the climate and ecological crisis, I argue that there is a wider, and fuzzier, range of participatory options available to the critical rhetorician working at the crossroads of science and climate disaster.

Consider, for instance, my involvement with scientist activists arguing for life scientists to "change tactics" in the biospheric emergency (Racimo et al., 2022). I was invited by a scientist activist based in Denmark to contribute with my knowledge of the history and rhetorical dimensions of scientist activist efforts. The article flags all authors as "members of the movement Scientist Rebellion" (p. 2), a label that is, as explained above, awkward and ambivalent to me. Still, the article contains points to be found within my dissertation, some added to the text directly by me, some added by other authors, for instance that scientists should not "shy away from naming the forces behind the climate and ecological crisis" (p. 7) and the risk that "scientific recommendation will be lost in the wind if they only take the form of polite appeals to dominant structures of power, particularly when those very same structures are the ones we are trying to transform" (p. 8). A lot of the references that I cite in central passages of my own work has been carried over into this co-authored article outside my dissertation (Allen, 1970; Brysse et al., 2013; Cox, 2007; Frickel, 2004; Kotcher et al., 2017; Moore, 2008; Pietrucci & Ceccarelli, 2019; Soule, 1985). Again, I have the sense of being inside and outside all at once – part of the movement, but not; a researcher, yes, but certainly not a life scientist; agreeing that scientists can and should do more, but also trying to stake out nuanced ways of doing so, which might work well with the theories of change of Scientist Rebellion and Extinction Rebellion (Chenoweth & Stephan, 2011); participatory to be sure, but not in the PCR sense of placing my body in supportive proximity to the rhetorical processes of the marginalized.

I do not regard the above awkwardly ambivalent 'inbetweennesses' as a failure of scholarly stringency and investigatory dispassion but as a productively impure involvement with the very subject of my research. Thus, "The biospheric emergency calls for scientists to change tactics" can serve as a microcosm for the impurity of my scholarly and personal engagement with and investment in scientist activism in the climate and ecological crisis. There is obviously no firm set of rules or guidelines for how to work with this. In the following, I therefore offer a set of exploratory 'pseudo-principles' to serve as inspiration for others wishing to dive into impure methodology.

Pseudo-principles for Impure Methodology

McKerrow (1989, pp. 102–108) proposes eight principles for the critical rhetorical practice that he advocates (not a methodology, he clarifies, but an "orientation" (p. 100)). I will also propose a list, but I find principles, although orienting, to be too strong a programmatic ambition for impure methodology (and I do not conceit myself with the idea that I might inaugurate a groundbreaking turn in my discipline in the way McKerrow did). Instead, I propose below a number of *pseudo-principles*, more playful and exploratory than seeking to establish a new 'turn' for rhetorical scholarship. Impure methodology provides us with a multifarious vantage point from which to think about rhetorical criticism, critical rhetoric, PCR, and scholarly endeavors broadly.

- Impure methodology constantly questions purist separations of the spheres for science and society. This goes for the borders installed between research and communication of research, between debating and disseminating, between different genres of publications, between the affects studied by the scholar and the affective reactions and reorientations of the scholar, etc.
- Impure methodology **privileges neither closeness nor distance**, just as it privileges neither science nor politics. Instead, it asks, with Timothy Morton, for "a progressive ecology that [is] big, not small; spacious, not place-ist; global, not local (if not universal); not embodied but displaced, spaced, outer spaced" (2010, p. 28). While Morton's object oriented ontology on the whole is not necessarily helpful to impure methodology (or to the political struggle in the biosphere), there is a point in noting that a hyperfocus on the local, the proximate, the embodied, and the immediate does risk leaving important global forms of solidarity and critique unfeasible. Caring about and for a biosphere in crisis means for the scholar to work across vast distances as well as 'close to home', fostering solidarity near and far.
- Impure methodology is **fundamentally participatory** but in a broad sense of this word. Taking part in the democratic project is both highly urgent and highly diffuse for the critical scholar in the climate and ecological emergency. So be it. Participation might mean *being there*, sure, but the *there* is easily problematized when finding oneself on shifting, breaking ground. Following the previous pseudo-principle, impure methodology opens up avenues for critical rhetorical participation *in absentia* as much as *in situ*; or, it widens the idea about what being *in situ* and *in absentia* could mean.
- Impure methodology implies no fixed method or set of methods. As stated in this
 essay's introduction, methodology in Gries's sense refers to the overall approach to
 rhetorical or other humanities scholarship, not the specific methods. If anything, impure
 methodology purposefully *downplays* method, at least initially, because the urge to fulfil a
 stringent and strictly defined set of methodical guidelines might in some cases prove
 counterproductive to the radical openness needed. Here, impure methodology, while still

denying the requirement of site specificity in academic-intellectual work, agrees with McKerrow that "creative insights are constrained by the systematicity of method" (1989, p. 102). However, we should also keep our Bitzerian basics in mind (Bitzer, 1968) and recognize that constraints are neither good nor bad in and of themselves. Thus, impure methodology welcomes all methods, especially if they mix and mingle, pollute and pollinate each other.

- Impure methodology is **transdisciplinary** because working in and with critical times means working across space, time, and practices, often in unanticipated ways. If science and activism, for instance, intermingle and in so doing inform each other productively, writing forth this generative intermingling surely begs a kind of research speaking across fields in a similar sense. Furthermore, impure methodology is not afraid of borrowing and even 'stealing' in the sense of snatching something abruptly from its original disciplinary context concepts from any kind of discipline and put them to novel uses. I here follow Brian Massumi's (2021) remarks on writing in the humanities as a generative and inventive practice. That is, writing in a way that seeks a "systematic openness" (p. 20) not simply applying concepts but letting them lead the scholar into volatile territory, at times even leading to a "shameless poaching from science ... that betrays the system of science while respecting its affect, in a way designed to force a change in the humanities" (2021, p. 22).
- Impure methodology in critical rhetoric contributes to the conversation in other fields and disciplines about **undoing the harmful norms of the neoliberal university**, advocating an openness to disruption (Garey et al, 2014) in a "slow scholarship" framework acknowledging "the benefits of unexpected 'disruptions' in the research and writing process" (Mountz et al., 2015, p. 1238). As the scholar working with impure methodology rejects institutionalized norms of 'impact' and 'competitiveness' and opens themselves to disruption and adventurousness, the outcome of this research will necessarily constitute a protest to current frameworks for knowledge-creation.
- Impure methodology is mindful about power structures and unjust hierarchies and sees these as an absolute core reason to engage in scholarship in the first place. However, it does not *reify* these structures and hierarchies but has a special eye for how the

conceptualization of these very relations of struggle become destabilized in crisis times – as exemplified by the way scientist activists can destabilize ideas about the institutional and the non-institutional. Working with scientist activist movements is, in fact, a prime example of the necessity of this perspective.

- Impure methodology is difficult to detect in the 'finalized' scholarly text. I write not
 finalized but 'finalized' following impure methodology's insistence on openness paving the
 way for any method and any style of writing. Individual publications are simply (or not so
 simply) photographs of the impure methodologist's awkwardly ambivalent travels through
 knowledge and politics in strange real time. I regard this as a strength instead of a
 weakness, opening the scholar adopting the above pseudo-principles to the times of crisis
 to inform the research perpetually, if diffusely.
- Finally, impure methodology is **always in doubt**, here understood as "a pesky sense that something just isn't correct between my habits of mind and the given or changing existence of the world" (Povinelli, 2021, pp. 3–4). Doubt and anxiousness are, fundamentally, vital and indispensable affective registers in scientific work as such, much needed to work in concert with other modes of thinking-feeling to produce cogent research (Schaefer, 2022). Thus, I am not sure that these pseudo-principles are useful to other scholars. That is a risk I am willing to take, since "in order to write experimentally, you have to be willing to 'affirm' even your own stupidity" (Massumi, 2021, p. 19). Ignorance might be bliss in this sense too: Without it, we risk too little. Warnick (2004) reminds us as much: "Without the risk of self, neither the critic nor her readers can really be positioned to consider the grounds of judgment" (p. 67).

I have deliberately chosen to have 'too many' points for a neat summation of principles. In the spirit of impure methodology itself, I have left in (at least) as many points as I have edited away during the writing process. I have allowed the pseudo-principles to mutate just as this essay is itself a mutating outgrowth of my other dissertation articles. In this spirit, I will end with not the customary conclusion but with a 'pseudo-conclusion'.

Pseudo-Conclusion

Move forward into grey. (ANOHNI, "There Wasn't Enough", 2023)

A common characterization of the discussion within rhetorical scholarship is that "[c]ritical rhetoric used its scholarship to participate, explicitly, in the political, while traditional rhetoric studied the political from afar" (Wilson, 2020, p. 292). I hope that this essay has contributed to this discussion with the idea that rhetorical scholarship can participate in the political from afar in various senses, and that this does not necessarily decrease the critical or democratic value of engaged scholarship. In some cases, and for various reasons specific to the context in which the scholarship is crafted, it may enhance it.

We might in some situations, as when dealing with scientist and academic movements in the climate and ecological crisis, understand the labors of the critical rhetorician as uneasily moving between different sites: bringing the knowledge gained within the university institution to movement activities, and vice versa. Thus, I aim to retain the foundational goal of McKerrow's (1989) critical rhetoric to attempt "to identify the possibilities for future action" (p. 91) while heeding Middleton et al.'s (2015) call for "a commitment to flexibility" (p. xxii) in PCR studies, even as I problematize and/or expand their minimum requirement "that the critic be present as the rhetorical practices under examination unfold" (p. xix). If being present does not refer to a localization on a static grid, but fluctuating movements (Massumi, 2021), we must look to the multitude of meaning of participation. Presentness in the climate and ecological emergency amounts to many other things than entering a field. Indeed, it is in a fundamental sense not possible to be un-present as the atmosphere traps increasing amounts of heat.

In their account of critical theory as scholar activism in political science, Bradley J. Macdonald and Katherine E. Young (2018) sensibly bind together the *in situ* and *in absentia* aspects of critical scholarship in their proposal that "critical theory as scholaractivism resolutely performs the importance of both distance and engagement, in keeping the so-called 'Ivory Tower' in tension with the everyday world of political struggles" (2018, p. 538). I feel this tension every day producing knowledge and meaning, all the time making me change and enhance my perspectives. I have called this particular attunement to scholarly thinking-feeling awkward ambivalence. Perhaps a better name for it can be found. Perhaps it will turn up, unexpectedly, as I move through the tensions, never not impure, into grey future.

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Summary

This PhD dissertation consists of four independent research articles and an introductory chapter responding to the following research questions: *How do contemporary expressions* of scientist activist rhetoric unfold and function within the broader spectrum of knowledge work and climate politics? How is scientific ethos (re)negotiated in scientist activist rhetorical practices in the climate and ecological emergency? What would productive trajectories for scientist activism in times of crisis look like, and how can we get there? The dissertation uses a rhetorical-critical framework engaging with multiple fields to examine discussions among scientists about the responsibilities and purposes of social action in the climate and ecological emergency as well as scientist activist protest events attempting to persuade the wider public, especially those in power, that substantial climate policy is needed, while doing so in the name of science. The methodology of critical rhetoric is discussed in relation to these topics as well as to the dissertation's author's specific research trajectory during the past three years.

Overall, the dissertation argues that discursive shifts in the broader climate debate affords new rhetorical opportunities for scientists. The scientists seizing on these opportunities by engaging in activism and social movement work inevitably engage in a rhetorical (re)negotiation of scientific ethos. It is argued that especially the unruly bodily rhetoric of scientists and the movement of scientists' bodies between different sites generates questions about the role and responsibilities of scientists in the Anthropocene. Scientist activists thus productively engage in the climate and ecological crisis by critically interrupting preconceived notions of science and society. A conceptualization of rhetorical ethos as place-based and 'unrestful' is offered to account for these movements. It is argued that scientist activists could benefit from increasing the focus in their rhetorical practice on the ways in which science itself is entangled with the planetary destruction of the fossil economy. A rhetorical-humanistic approach to social movement work and activism can assist the efforts of scientists to grapple with these questions – and, in turn, the unravelling and evolving 'unrestful' relations of science, society, and the biosphere places difficult demands on rhetorical critics working with these subjects.

Dansk resume

Denne ph.d.-afhandling består af fire selvstændige forskningsartikler og en kappe, som besvarer følgende forskningsspørgsmål: Hvordan kommer samtidig videnskabsaktivistisk retorik til udtryk, og hvordan fungerer den i et bredere vidensproduktions- og klimapolitisk spektrum? Hvordan bliver videnskabelig etos (gen)forhandlet i videnskabsaktivistisk retorisk praksis i klima- og miljønødssituationen? Hvordan kunne produktive udviklingsbaner for videnskabsaktivisme i krisetider se ud, og hvordan kan vi komme derhen? Afhandlingen anvender et retorisk-kritisk udgangspunkt i samtale med en flerhed af felter til at undersøge diskussioner omkring ansvar og formål for social handling i klima- og miljønødssituationen blandt videnskabsfolk videnskabsaktivistiske samt protestbegivenheder, der i videnskabens navn forsøger at overbevise den bredere befolkning, og i særdeleshed magthaverne, om, at der er brug for substantiel klimapolitisk handling. Kritisk retorisk metodologi bliver diskuteret i relation til disse emner såvel som til afhandlingsforfatterens specifikke forskningsforløb i løbet af de sidste tre år.

Overordnet set argumenterer afhandlingen for, at diskursive skift i den bredere anledning til nye retoriske muligheder for videnskabsfolk. klimadebat giver Videnskabsfolk, der griber disse muligheder ved at engagere sig i aktivisme og socialt bevægelsesarbejde, engagerer sig uundgåeligt i en (gen)forhandling af videnskabelig etos. Der argumenteres for, at særligt videnskabsfolks uregerlig kroplige retorik og forflyttelsen af videnskabsfolks kroppe mellem forskellige steder genererer spørgsmål omkring roller og ansvar for videnskabsfolk i Antropocænen. Videnskabsaktivister engagerer sig dermed produktivt i klimakrisen i og med deres kritiske afbrydelser af foreliggende forståelser af videnskab og samfund. Et begreb om retorisk etos som stedsligt forankret og 'urolig' foreslås for at forstå disse bevægelser. Der argumenteres for, at videnskabsaktivister kan drage fordel af et øget fokus i deres retorik på måderne, hvorpå videnskaben selv er viklet ind i fossiløkonomiens planetariske ødelæggelse. En retorisk-humanistisk tilgang til socialt bevægelsesarbejde og aktivisme kan støtte videnskabsfolks forsøg på at bearbejde ovenstående spørgsmål - og samtidig stiller de optrevlende og forandrende 'urolige' relationer mellem videnskab, samfund, og biosfæren vanskelige krav til retoriske kritikere, der arbejde med disse emner.