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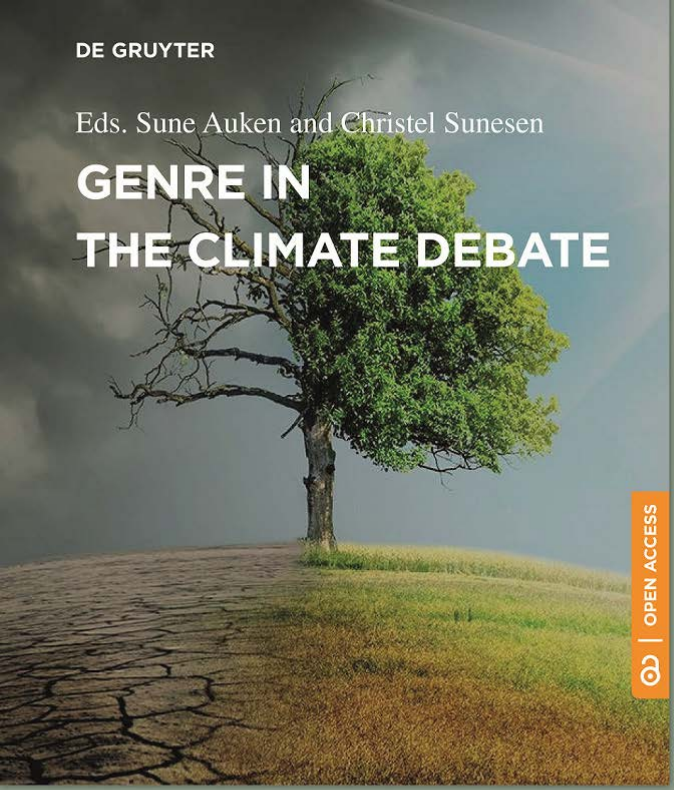
Eds. Sune Auken and Christel Sunesen

GENRE IN THE CLIMATE DEBATE



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Managing Editor: Katarzyna Grzegorek

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Sune Auken & Christel Sunesen

Sune Auken

1 Introduction: Genre in the Climate Debate

The fundamental idea of the present volume is that an engagement with the genres involved in the climate debate can be a key to understanding, developing, and perhaps even changing the debate.

The book's starting point is twofold. On the one hand, a well-known problem, the gap between the near-unanimous agreement in science about the basics of human made, or anthropogenic, climate change (ACC), and the widespread lack of acceptance of this agreement in the public sphere. On the other, a field of study, genre research, which has been through an explosive development during the last three decades, but is still a long way from having made its full impact on research and is largely unknown beyond the academy.

Briefly stated, the connection between the two is that genres play vital roles in human interaction. We express ourselves in genres, learn in genres, and act in genres. Therefore, the question about how knowledge of ACC spreads – or, as the case may be, does not spread – from the scientific sphere to a broader public will to a very large extent be influenced by the genres in play, and by the use of those genres by individual actors.

More than this, however, is the *role* played by genres – and by genre users – in the climate debate. Genres are strong carriers of tacit cultural knowledge (Devitt, 2004; Auken, 2015a), and their role in social interchanges and institutional communication have been analyzed many times over (for instance, Andersen, 2015; Artemeva, 2008; Bazerman, 1994; Berkenkotter, 2011; Bhatia, 1993; Devitt, 1991). However, there is also a more problematic side to genres, since genres are habitual and may acquire what Paré has called an "illusion of normalcy" (2002). Genres may even, in Judy Segal's apt phrase, become carriers of a "cultural reproduction of ignorance" (2007, 4; see also Segal, 2012). Genres are carriers of power relations, social roles, and ideologies, and may as such, both by their very existence and through conscious use by individual actors, hold back knowledge and skewer action.

The book, thus, takes up the ACC debate as a question of genre. It aims to demonstrate how established genre structures both facilitate and hold back knowledge about ACC. Moreover, the book describes how individuals or groups of actors use, modify, contradict, manipulate, and sometimes even create genres to achieve their aim. Therefore, the basic idea from a knowledge point-of-view is to explore how a theory set can shed new light on a lingering conundrum. However, given the exigent character of climate change, and the unsolved problems in climate communication, the reach of such new light may prove to be much wider.

1.1 The Protest Sign and the Research Article

Compare two statements about ACC. The first, written in upper-case letters across a hand painted picture of the world, is taken from a protest sign displayed at the Chicago People's Climate March on April 29th, 2017. The text reads "Climate change is real. In other news, water is wet." (See Levenson, 2017.) The second is from a research article dealing with the scientific agreement about the reality of ACC: "Climate scientists overwhelmingly agree that humans are causing recent global warming. The consensus position is articulated by the Intergovernmental Panel on Climate Change (IPCC) statement that 'human influence has been the dominant cause of the observed warming since the mid-20th century' (Qin et al., 2014, 17)". (Cook et al., 2016, 150).

The two statements carry the same basic claim – that the evidence for the reality of ACC is beyond reasonable doubt – and they share the assumption that this knowledge should lead to political and societal action. However, the differences between the two statements are equally obvious, and neither would work in the context of the other. The protest sign juxtaposes the statement that climate change is real with another statement "In other news, water is wet". This is an established expression that marks something as so blindingly obvious, that even saying it should be as trite as publishing a news story about water being wet. This kind of metaphorical argument would be unconvincing in a research article.

The statement from the research article is an extended ethos argument; the article posits the reality of ACC by presenting the agreement of the scientist most knowledgeable about the topic. This specific ethos argument, the argument from expertise, is well-known in science communication and prevalent in climate communication. As the overwhelming majority of the public, including politicians, investors, journalists, and debaters, are non-scientist they are unable to understand, much less vouch for, the science involved in establishing the reality, the causes, and the consequences of ACC, the "percieved consensus" of those who actually understand the topic becomes important (Lewandowsky, Gignac, & Vaughan, 2012). Cook et al. (2016) work to establish the evidence for that agreement. However, the statement is far too long, and requires too much prerequisite knowledge, to fit neatly on a protest sign.

The differences, thus, are not of message – or even necessarily of knowledge; a person knowledgeable in climate science could have written the protest sign too. They are differences of *genre*. Each of the two statements appear in a particular situation, with a particular communicative purpose and subject to a particular set of rhetorical constraints. The text on the poster is simple, and its message can be seen and read from a distance. It is written over a picture of the Earth and carried in a march alongside other signs; it thus adds to the rhetorical strength of another genre, the march, and at the same time relies on said march to frame and carry its message. The text is whimsical, but it is also affirmative, strong and unhedged.

The text from the research article also relies on its genre to make its point. Compared to the protest sign it is hedged using terms such as "overwhelmingly agree,"

"consensus position" and "dominant cause" and "observed" each implying the existence of counter-information or counterclaims. The statement in question is embedded in a research article, which provides the arguments and the evidence for the claim, mostly presented in statements that are even less likely to ever make it onto protest signs. However, when seen in the context of its own genre the article's presentation of its claims are muscular and assertive; and the hedges in the quote are themselves of a sort that may hedge, but in fact leave little room for the alternate viewpoints implied. Language as strong as this is rare in research articles on complex systems such as the Earth's atmosphere. Seen in the context of its genre, the statement comes very close to saying: "In other news: water is wet".

The two concrete texts, the poster and the article, probably never touched. At most, it is possible, if unlikely, that the painter of the sign read the article. However, the two genres are clearly connected. Despite their differences, they are not at odds, but interdependent. The protest sign presupposes an established knowledge with strong enough evidence to support the claim, and the whole existence of the march, including the poster, is unthinkable without both an extensive climate science and an enormous effort in communicating the findings of said science.

The research article on the other hand derives from a situation in which scientific agreement on ACC has become a critical issue in the public debate, in which it is necessary, so to speak, to be able to say, "Climate change is real. In other news, water is wet." It establishes part of the evidence for claims like this, and even discusses the usefulness in the public sphere of the scientific agreement on ACC. On the other hand, the research study itself can only communicate its findings to a relatively small group of scientists, researchers, and possibly a few other interested parties. It depends on an uptake from other actors into more popular genres; genres that are able to reach a wider audience and put pressure on decision makers in economy and politics. Beyond the protest sign, these genres could include petitions, tweets, and statements in parliamentary hearings, news satire, or subdued dissemination pieces that try to reach a less convinced audience, like the series of videos and articles on prominent climate scientist Katharine Hayhoe's homepage.[1]

Thus, the two genres interlock. Even if an exact path of influence cannot be established between the research article and the protest sign, it is fair to say that there is a clear connection between the genres. Articles like Cook et al. (2016) have, sometimes directly, but mostly through a variety of different channels, influenced public perceptions of ACC in such a way that it has become obvious to the painter of the protest sign to adorn it with the statement "Climate change is real. In other news, water is wet."

1 Seen Feb. 21st, 2019. On blogging as genre see, among others, Devitt (2009a); Miller (2017); Miller & Shepherd (2004).

1.2 Genre Research

In the context of *genre research*, the joint starting point for the chapters to follow is the North American Rhetorical Genre Studies (RGS) – albeit with excursions into related theoretical traditions depending on the topic of each chapter and the individual research interest of each author. The established narrative about this goes back to Carolyn Miller's trailblazing study "Genre as Social Action" (1984) and describes a change in which a genre is seen as "a situation-based fusion of form and substance" (153).[2] The meaning of this is not – even if it has sometimes been taken up this way – that formal or thematic elements of an utterance are of little or no significance. In the case of the two genres mentioned above, for instance, Miller's approach would mean that their formal characteristics and their thematic content ("substance" in Miller's terminology) should be seen in relation to the function of the two genres. This is suggested, of course, in the analysis above, but to reiterate: both genres, the protest sign and the research article, have a situation in which they are trying to act, and their form and content are organized to fit that purpose.[3]

Working from Miller's study and other foundational publications (for instance, Bakhtin, 1986; Bazerman, 1988, Berkenkotter & Huckin, 1993; Bhatia, 1993; Devitt, 1991, 1993; Freedman & Medway, 1994; Jamieson, 1975; and Swales, 1990), functional perspective scholars within the RGS tradition have developed genre into a multifaceted core concept of several disciplines: rhetoric, linguistics, communication and media studies, information studies, and composition. In the process, genre research has developed a nuanced vocabulary for describing, in particular, genre use in institutional and educational settings, often in a nuanced dialogue with the genre research from the English for Specific Purposes tradition, to which Swales and Bhatia mentioned above belong (See Devitt, 2015), and – to a lesser degree – the genre reseach prevalent within systemic functional lingustics. (For the distinction between the three traditions see Hyon, 1996).

The functional perspective has been prevalent in contemporary genre research in the RGS-tradition, and is only rarely challenged in theory (but see Auken, 2015b;

2 I refer to this as the "established narrative" of genre research because its basic structure is repeated time and time again in contemporary works on genre, and empahtically not because there is anything wrong with the narrative. It can be challenged, of course, but there is much truth in it. For an extensive rendering of the development and positions of contemporary genre research see Bawarshi & Reiff, 2010; for shorter versions see Miller, Devitt, & Gallagher, 2018; and Auken, 2018. A number of the central studies in the RGS-tradition can be found in Miller & Devitt, 2018. Challenges against the overall narrative can be found in, for instance, Freadman, 2012.

3 Throughout genre research, before and after Miller, the triad between the situational, the thematic, and formal sides of genre is rendered in a varied terminology and with differing interpretations of the relationship or hierarcy of the three sides. For a partial discussion and disambiguation, see Auken, 2015.

Devitt, 2009a). Alongside this development, the primary topic of contemporary genre research has come to be the genres in use. Thus, what is sometimes called humble genres, everyday genres, de-facto genres, or rhetorical genres have come to occupy center stage in the analysis of genre. Within RGS many important studies have been done on genres in practical use, and much less on the study of topics like literature, art, music, film, and high oratory which were at the center of attention in previous decades (but see Auken, 2014; Devitt, 2000; Frow, 2014; Nyboe, 2016; and Warren, 2019). This is connected with the shift in emphasis to the functional side of genre, as a new theory focus enables new studies, and they, in turn, strengthen theory. Many central distinctions in genre theory have sprung from case studies. However, as will be evident also from the studies in the present volume, researchers in the RGS-tradition rarely if ever isolate themselves to a functional perspective in their research practice. Rather, like Miller, they rely on a variety of situational, thematic and formal traits of the indvidual genres and utterances under scrutiny.

If we try to define genres based on existing research, we may say that they are flexible and versatile cultural categories structuring human understanding and communication. On the one hand, they are strongly regulative, but on the other hand, they allow considerable freedom on the part of both the utterer and the recipient. Genres combine to form larger patterns through social and organizational structuring into genre sets, systems, hierarchies, and chains, and through creative uptakes on the part of individual genre users. This tentative definition can be expanded into the six basic tenets of genre reseach, described in Auken (2018) which hold that

- Genres are almost omnipresent in human culture
- Genres unite regulation and innovation
- Genres combine to form larger patterns including other genres
- Genres are connected in time through uptake
- Interpretation thorough genre is often tacit and rarely understood as interpretation through genre
- Genres are ideological, but our perception of them tends to naturalize them or take them as a given.

Genre research is an expansive field, and there are concepts, even core concepts, not covered by these six tenets, but they summarize much of what is agreed upon, or simply taken for granted, in genre research across the differing fields. In particular, the fourth tenet has risen to prominence in the last approximately 15 years, as Freadman's bakhtinesque concept "uptake" has taken hold as one of the kingpins of contemporary genre research (Freadman, 1994, 2002; see also – among many others – Devitt, 2016; Dryer, 2016; Emmons, 2009; Thieme, 2006). This will be evident also in the chapters ahead. The broadened interest in uptake as an active act on the part of the genre user also marks a gradual shift in emphasis within genre research towards a more active appreciation of the role of the individual actor, as the uptake is an act by somebody and always involves an element of choice and freedom (Freadman, 2014).

This, in turn, affects how the second tenet is handled in genre research, as the "innovation" side of genre use gets more attention.

Recently, moves have been made in genre research to extend its reach further through anthologies about genres in the public sphere (Reiff & Bawarshi, 2016) and genres in new media environments (Miller & Kelly, 2017). For science, there is a notable change in genre use as the traditional distinction between professional genres and popularizations (see the already classic rendering in Fahnestock, 1986) is somewhat complicated with para-scientific genres (Kelly & Miller, 2016). The present volume continues the current trajectory in genre scholarship to explore how genres are changing, as traditional boundaries between professional and public spheres erode, and how the internet is influencing these changes. It does so by investigating a subject that to a very large extent plays out in the public sphere, and where genre emergence and the new media environments both have crucial roles to play, as evidenced by the chapters of Smart & Falconer (denialist discourse communities), Auken & Møller (news satire), and Mehlenbacher & Mehlenbacher (science activism on Twitter).

Furthermore, the volume adds a sustained engagement with a single crucial political topic. It thus takes one step further in moving genre research into a field of applied, or challenge-based, research in which the insights established in basic research are brought to bear on central societal issues. From the point of view of genre research, this means that a number of questions come into play that are if not neglected then at least underexplored in existing research. These questions include, but are not necessarily limited to, 1) the role and use of genre in campaigning to achieve – or limit – changes in society, and 2) the transmission of information and action across genre systems (Bazerman, 1994).

The first question picks up the understanding that genres are means to accomplish social purposes, as set out by Miller (1984) and systematized and expanded by RGS in the following decades, and moves it into the field of political debate and political campaigning. It thus expands the reach of genre research into an area of study where only minimal work has hitherto been done, but where its insights promise to be relevant. This expansion will pave the way for future research into the workings of genre in politics and in public debate. To execute this move successfully, the volume includes both a targeted theory chapter aiming to discuss how genres can be used for campaigning and debate (Devitt), and numerous discussions of theoretical points relevant to the same issue in the other chapters (for instance Reiff & Bawarshi and Mehlenbacher & Mehlenbacher).

The second question concerning the uptake between genre systems expands another core idea of genre research, the concept of genre use as uptake. Uses of genre are seen as creative reactions to (or "uptakes" of) previous uses of genre in what is effectively a social perpetuum mobile. A particular challenge is connected to the movement of action and information *across* the boundaries of genre systems, which is precarious at best even when regulated by metagenres (Giltrow, 2002) and interme-

diary genres (Tachino, 2012). (Metagenres are genres that regulate how other genres are to be performed; intermediary genres are genres that facilitate the uptake of one genre by another.) Freadman, who uses a different terminology, notes the problem as important, but it has yet to receive the attention in genre research it merits.

This problem is, however, at the core of the present volume, since the transfer of knowledge and action between the genre system of the sciences and those of the surrounding society is the key starting point for the volume. The demarcation lines between the sciences and the surrounding society have been drawn to great rhetorical, institutional, and political effect (Gieryn, 1983, 1995; Taylor, 1991), but the strength of the demarcation also makes crossing it fraught with difficulty. From a genre perspective, the stronger and more formalized the boundary between genre systems is, the more it is "open to mistake or even to abuse" (Freadman, 2002, 44). More so to the degree that the transmission is weighted with political, economic, personal, or ideological consequences for the actors. Therefore, from the point of view of genre research the climate debate is an ideal subject to discuss the uptake between genre systems as it both deals with strongly established demarcations and with highly invested actors.

1.3 Scientific Evidence and Public Opinion

In the case of the protest sign and the research article, the back-and-forth transmission between the two *genres* was fairly straightforward, even if the concrete artifacts never met. Often however, the transmission between scientific evidence and public opinion is much less straightforward. As Cook et al. (2016) indicated, the scientific agreement about the reality and the severity of ACC is long-standing and well-nigh unanimous (see also Anderegga, Prallb, Harold, & Schneidera, 2010; Benestad et al., 2016; Cook et al., 2013; Oreskes, 2004; Powell, 2016; Skuce et al., 2016), but no such agreement exists in public discourse. The public understanding concerning climate change has remained divided for decades (Brulle, Carmichael, & Jenkins, 2012; Hamilton, 2011; Hornsey, Harris, Bain, & Fielding, 2016; Lewis, Palm, & Feng, 2019; Nisbet & Myers, 2007), and political and economic decision-making has progressed at a crawl. "Clearly, there is an urgent need for effective ways to engage diverse audiences about global climate change" (Wu & Lee, 2015). By consequence, the political and societal reaction to ACC has hitherto been far too weak compared to the magnitude of the problems. Indeed, with the withdrawal of the United States from the Paris Agreement, progress may even be the wrong choice of words. This happens in the face not only of the overwhelming conclusive scientific evidence, but also of rising global temperatures and a steep climb in extreme weather events.

The key reasons for the slow pace of progress in the climate debate are fairly well known. There is widespread misinformation about the scientific agreement concerning ACC, some of it caused by false balance-coverage of the issue in the media. There

are even strong political actors actively spreading disinformation about ACC (Lewandowski, Oberauer, & Gignac, 2013; Oreskes & Conway, 2010; Supran & Oreskes, 2017; Søe, 2016, 2017; see also Smart & Falconer, this volume). Moreover, to many the issue not only seems distant, delayed in time, affecting places far away, or working in ways we are to an extent shielded from, but it is also so scary, and potentially life-changing, that it makes many people reticent to even engage with the topic (Gifford, 2011). Thus, the gap between science and the public debate concerning ACC has less to do with the difficulties of translating complex scientific propositions, and more to do with differences of ideology, of political and economic interests, and with the general reluctance of the public to recognize the severity of ACC and act accordingly (Moser, 2010, 2016). Thus, the established channels for science communication have made progress, at points great progress, but much remains to be done, and – given the exigent circumstances presented by ACC – needs to be done. This includes trying to establish new approaches to the field. The studies in the present volume represent one such attempt.

1.4 Humanistic Climate Studies

The field of *humanistic climate studies* is vast, rapidly developing and spread across a number of individual disciplines (Moser, 2010, 2016). There are whole journals dedicated solely to climate change issues (including *WIREs Climate Change* and *Nature Climate Change*), containing numerous articles relating to the humanities and the social sciences; others have it as a recurrent subject.[4] Also, journals like *Science Communication* and *Global Environmental Change* have climate change communication as one of their most pervasive topics. The disciplines working with climate change from a humanistic and social science perspective include, but are not limited to, science communication, sociology, law, rhetoric, ethnography, psychology, media studies, humor studies, and a variety of aesthetic fields.

Given all this, a claim for absolute novelty in the field is hard to sustain. However, there are indications that a valuable contribution is possible. There are very few studies that work with ACC from a genre perspective (the best examples are Smart, 2016; and Bazerman, 2010. The latter study has been reworked into the context of the present volume. For a related treatment, see Tillery, 2003; see also Bazerman, Little, & Chavin, 2003). However, given that one of the core insights of genre research is that genre is an active factor in well-nigh all human culture, communication and cognition, it is to be expected that genre plays defining roles in the debate over ACC as well.

4 By consequence of this, the representation of the topic in these short paragraphs is a meagre, and thus to an extent unfair, representation of a very large and – scholarly speaking – extremely rich research field. A full rendering of the state of the art in humanistic climate research is considerably beyond the scope of the present chapter.

Thus, it is unsurprising to find that a number of important humanistic climate studies analyze or rely on genre features in the ACC-debate, but do not relate to existing genre research. For example, Boykoff (2007; 2013), as well as Boykoff & Boykoff (2004; 2007), and Boykoff & Goodman (2009), all work with genre features in news media; Ceccarelli (2011) discusses both uptake and known genre features of scientific and public debate, and Ouariachi, Olvera-Lobo, & Gutiérrez-Pérez (2017) discuss climate change communication in a strong recent genre, online games. However, only one of these studies, Boykoff & Goodman (2009), even mentions genre, and none of them relate to existing research in the field. This is not in any way a shortcoming in these excellent studies, but it does point to an unexplored, or at least under explored, approach.

Furthermore, a literature review suggests that there is a widespread awareness of structural and ideological issues in humanistic climate studies. However, there is little awareness of the way the structural and ideological issues are determined by the genres in play, and individual genres are approached without knowledge of genre research as a coherent field of knowledge. Therefore, what the volume has to offer is an extensively developed and organized body of knowledge concerning the way genres shape and are shaped by human interaction. The present volume, thus, aims to shed new light on the implied knowledge and ideology (Devitt, 2009b; Paré, 2002; Segal, 2007) of the genres in use in the climate debate and on the complex generic interchange between genres and genre systems in the climate debate.

1.5 The Structure of the Volume

The two chapters that follow the present introduction set out the theoretical background for the analyses and discussions of the volume. In chapter 2, "Genre *for* Social Action: Transforming Worlds Through Genre Awareness and Action", Amy Devitt presents a more generalized analysis of the use of genre in activism. The title, obviously, mirrors Miller's groundbreaking article with one major difference: The shift from "as" to "for". This shift does not mark an opposition to Miller, but rather an extension of her argument into a new field. From the point of view of genre research, this sets the stage for the chapters to follow. Indeed, it is worth noting that the basic idea for the present volume springs from earlier sketches of this chapter. Genre research has established an extensive vocabulary aimed at understanding how genres work in institutions, in new media, in the public sphere and in personal exchanges. However, it has done little with politics and possibly even less with public campaigning. Devitt's chapter establishes a central part of the theoretical groundwork needed for such an analysis; relocating the research from the general function of genre, "as", to the active usage of it, "for". Given Devitt's extensive engagement with the foundations of existing research, the chapter can further serve as an orientation to the reader unfamiliar with genre research.

In chapter 3, "Scientific Knowledge, Public Knowledge, and Public Policy: How Genres Form and Disrupt Knowledge for Acting about Anthropogenic Climate Change", Charles Bazerman presents an analysis of the specific challenges and boundaries connected to the uptake from the genre system of the sciences to other central genre systems in politics, in the media, in business life, etc. This transmission – and the translation of it into action – is anything but automatic, and these spheres do not always work in concert. There are significant obstacles and even resistance to communication of knowledge across boundaries, and many of these boundaries have to do with the inter- and counterplay of the genres involved. The chapter details how citizen involvement has played a central role in driving the other spheres into action, and how governments have gradually taken over that role albeit still with major disruptions taking place, in particular from some business actors, for whom action to mitigate climate change was calculated to be more costly than the effects of the change.

This is followed by two chapters discussing some ways in which knowledge about ACC is disrupted in the uptake between the genre systems of the sciences and the surrounding society. In chapter 4, "How the US Congress Knows and Evades Knowing About Anthropogenic Climate Change: The Record Created in Committee Hearings, 2004–2016" Charles Bazerman and Josh Kuntzman discuss the acceptance and non-acceptance of knowledge about ACC in the political system in an analysis of hearings on ACC in the US Congress. The chapter examines the records of congressional hearings as a crucial political genre, because hearings are one of the central genres through which the US congress recognizes knowledge relevant to its work. However, the actors performing the genre, particularly the committee chairs who control the agenda, have the option to disrupt the knowledge process. As a consequence, a contentious and wide-reaching issue like the reality and severity of ACC may not be recognized as the US Congress, despite the overwhelming scientific consensus, and despite the hearings, because committee members often challenge statements about its reality. Moreover, expert testimonies by scientists are often countered by testimonies from denialists – in a variation of the false balance issues known within news media coverage of ACC as mentioned above. Thus, the hearings that should serve to inform the US Congress about ACC, are used by certain actors to hold back Congress' recognition of ACC.

Whereas Bazerman & Kuntzman consider a highly official and formalized genre, chapter 5, "Genre, Uptake, and the Recontextualization of Climate-Change Science by 'Denialist' Cultural Communities" by Graham Smart and Matthew Falconer addresses a quite different side of the debate. The chapter describes how the evidence established in the sciences is taken up in denialist discourse coalitions. Specifically, Smart and Falconer look at how three denialist cultural communities use the digital discourses of websites, blog posts, podcasts, e-newsletters, and linked e-documents in recontextualizing – that is, in this case, intentionally misrepresenting, transmuting,

and/or refuting – readily available information on the accepted scientific view of climate change in order to inhibit the intended uptake of this information.

The following four chapters pick up individual genres that have potential to navigate the gap between the understanding of ACC in the sciences and in the public sphere. The first two chapters address humor genres. In chapter 6, ""THINK BIG and then do absolutely NÜSCHTE". News Satire and the Climate Debate", Sune Auken and Mette Møller address the representation and use of ACC in the fast moving and independent news satire genre. The chapter approaches both the genre's main traditions: TV-shows inspired by the work of *The Daily Show with Jon Stewart*, which generally represents the actual news and satirises it, and the newspaper-mimicry of *The Onion* and its apprentices, which invents news stories that satirise current events. As a genre, news satire combines parody and satire, as it mock-mimics the established news genres and use them as vehicles of laughter, taunts and criticism against the surrounding society and against the news genres themselves. The chapter discusses how news satire represents ACC, and how the genre may affect climate change perception. News satire transcends false balance issues in mainstream media and consistently confirms the reality and severity of ACC, thereby highlighting the importance of climate action.

In chapter 7, "This will all be yours – and under water: Climate Change Depictions in Editorial Cartoons", Esben Bjerggaard Nielsen and Felix Felix Kühn Ravn discuss a genre that is generically bound and institutionally limited by its context in the editorial section of newspapers and thus occupies a discursive niche that is markedly different from that occupied by news satire. The chapter details the social motives and formal intricacies involved in the editorial cartoon. The chapter focuses on different ways in which the editorial cartoon as a genre navigates between specific and more general contexts, as it targets ACC and the debate surrounding it. The chapter demonstrates how the editorial cartoon may present different exigencies and policy positions by means of humor that skewers its satirical target. The chapter presents a range of argumentative themes such as "consequences", "capitalism", "climate change deniers" and "climate skepticism" that are prevalent in American editorial cartoons.

After this, the next two chapters each analyse genres used to influence politicians and public opinion. Again, one of these, the petition, is strictly bound and formalized, whereas the other, the tweet, is discursively much more free-floating. In chapter 8, "How to Turn Accumulated Knowledge into Action": Uptake, Public Petitions, and the Climate Change Debate", Mary Jo Reiff and Anis Bawarshi take up the public petition. The chapter discusses the actions and interactions that take place between and around the act of petitioning and provides further insight into the forces that shape uptakes of petitions and that limit and enable its social actions. The plural "actions" is intended, as petitions, though they look like singular actions, are complex sites of interaction where the supposed official uptake into corporate or government action may not be the actual, or for that matter: expected, uptake of the petition. It may lead

to mobilization, other kinds of activism, or a heightened attention to the subject petitioned for, even if the official uptake is limited.

The subject of the following chapter, the tweet, is a genre of "backdoor action". Chapter 9, "Rogue Rhetorical Actors: Scientists and the Social Action of Tweeting" by Ashley Rose Mehlenbacher and Brad Mehlenbacher, analyses tweets from scientists who have been barred by political decisions from using their official genres for factually based ACC communication. The case describes a number of exchanges that broke out on Twitter as several government agencies received a gag order by the newly elected Trump-adminstration, and scientists took to tweeting to counter the gag. It describes their motives, their rhetorical strategies, and the challenges they face as they try to communicate about climate change on a fast-paced medium like Twitter. The chapter discusses how genre awareness is crucial in the fast paced and rapidly evolving genre landscape on social media. Thus, in the process, a genre of science communication shifted into a partisan political typification. Mehlenbacher & Mehlenbacher's point is not that it is wrong or problematic for scientists to engage in new genres of public communication, but rather that this engagement needs to be carried out with a reflective awareness of the genres involved, their possible uptakes, and the situation in which they function.

The volume's final chapter is a more personal reflection. In Chapter 10, "Genre, Anthropogenic Climate Change, and the Need to Smell your Body Odor. A Personal Postscript", Sune Auken picks up the overarching themes of the volume and reflects on the role of genre in the debate over anthropogenic climate change. Genre is a discursive battle ground in which actors maneuver to achieve their social purposes; not just on a personal or organizational level, but even in large-scale attempts to influence the direction of society. Therefore, the postscript suggests that an increased genre awareness has the potential to transform our approach to the manifold genres that meet us as we try to make sense of the debate over anthropogenic climate change, and in that sense, the studies in the present volume are only a modest first beginning.

Therefore, the chapters form a progression from salient theoretical concepts and themes, and specific problems towards different ways of addressing these problems within the genre framework. Taken together they describe some of the genre challenges and opportunities involved when we move across the genres to activate knowledge from the sciences into society at large. We are faced with challenges and opportunities of genre whether we try to act as researchers and teachers, as private citizens, or as political actors and activists, and no matter whether we tweet, write science blogs, attend meetings, or carry around protest signs saying, "Climate change is real. In other news, water is wet."

References

Anderegga, W.R.L., Prallb, J.W., Harold, J.W., & Schneidera, S.H. (2010). Expert credibility in climate change. *Proceedings of the National Academy of Sciences of the United States, 107*(27), 12107–12109. doi:10.1073/pnas.1003187107.

Andersen, J. (Ed.) (2015). *Genre theory in information studies.* Bingley: Emerald Group Publishing Limited. doi:10.1108/S2055-537720140000011019.

Artemeva, N. (2008). Approaches to learning genres: A bibliographical essay. In N. Artemeva & A. Freedman (Eds.), *Rhetorical genre studies and beyond* (pp. 1–99). Winnipeg: Inkshed Publication.

Auken, S. (2014). Genre as fictional action. *Nordisk Tidsskrift for Informationsvidenskab og Kulturformidling*, *2*(3), 19–28.

Auken, S. (2015a). Genre and interpretation. In S. Auken, P.S. Lauridsen, & A.J. Rasmussen (Eds.), *Genre and …* (154–183). Copenhagen: Ekbátana (Copenhagen Studies in Genre; vol. 2). https://curis.ku.dk/portal/files/140400280/6._Genre_and_Interpretation_1_.pdf.

Auken, S. (2015b). Utterance and function in genre studies: A literary perspective. In J. Andersen (Ed.), *Genre theory in information studies* (pp. 155–178). Bingley: Emerald Group Publishing Limited. doi: 10.1108/S2055-537720140000011009.

Auken, S. (2018). Understanding genre. *Journal of Zhejiang International Studies University*, 3(2), 14–27.

Bakhtin, M.M. (1986). The problem of speech genres (V.W. McGee, Trans.). In C. Emerson & M. Holquist (Eds.), *Speech genres and other late essays* (pp. 60–102). Austin: University of Texas Press.

Bawarshi, A. (2000). The genre function. *College English*, 62(3), 335–360. doi:10.2307/378935

Bawarshi, A. (2016). Beyond the genre fixation: A translingual perspective on genre. *College English*, 78(3), 243–249.

Bawarshi, A., & Reiff, M.J. (2010). *Genre. An introduction to history, theory, research, and pedagogy*. Fort Collins: Parlor Press.

Bazerman, C. (1988). *Shaping written knowledge.* Madison: The University of Wisconsin Press.

Bazerman, C. (1994). Systems of genres and the enactment of social intentions. In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (79–101). London: Taylor & Francis.

Bazerman, C. (2010). Scientific knowledge, public knowledge, and public policy: Genred formation and disruption of knowledge for acting about global warming. *Linguagem em (Dis)curso, 10*, 445–463.

Bazerman, C., Little, J., & Chavin, T. (2003). The production of information for genred activity spaces. Informational motives and consequences of the Environmental Impact Statement. *Written Communication, 20*(4), 455–477. doi:0741088303260375.

Benestad, R.E., Nuccitelli, D., Lewandowsky, S., Hayhoe, K., Hygen, H.O., Dorland, R. v., & Cook, J. (2016). Learning from mistakes in climate research. *Theoretical and Applied Climatology, 126*(3–4), 699–703. doi:10.1007/s00704-015-1597-5.

Berkenkotter, C., & Hanganu-Bresch, C. (2011). Occult genres and the certification of madness in a 19th-century lunatic asylum. *Written Communication, 28*(2), 220–250. doi:10.1177/0741088311401557.

Berkenkotter, C., & Huckin, T.N. (1993). Rethinking genre from a sociocognitive perspective. *Written Communication, 10*(4), 475–509. doi:10.1177/0741088393010004001.

Bhatia, V.K. (1993).*Analysing genre: Language use in professional settings*. London: Longman.

Boykoff, M.T. (2007). Flogging a dead norm? Newspaper coverage of anthropogenic climate change in the United States and United Kingdom from 2003 to 2006. *Area, 39*(4), 470–481. doi:10.1111/j.1475-4762.2007.00769.x.

Boykoff, M.T. (2013). Public enemy no. 1? Understanding media representations of outlier views on climate change. *American Behavioral Scientist, 57*(6), 796–817. doi:10.1177/0002764213476846.

Boykoff, M.T., & Boykoff, J.M. (2004). Balance as bias: Global warming and the US prestige press. *Global Environmental Change, 14*, 125–136. doi:10.1016/j.gloenvcha.2003.10.001.

Boykoff, M.T., & Boykoff, J.M. (2007). Climate change and journalistic norms: A case-study of US mass-media coverage. *Geoforum, 38*, 1190–1204. doi:10.1016/j.geoforum.2007.01.008.

Boykoff, M.T., & Goodman, M.K. (2009). Conspicuous redemption? Reflections on the promises and perils of the 'Celebritization' of climate change. *Geoforum, 40*, 395–406. doi:10.1016/j.geoforum.2008.04.006.

Brulle, R.J., Carmichael, J., & Jenkins, J.C. (2012). Shifting public opinion on climate change: an empirical assessment of factors influencing concern over climate change in the U.S., 2002–2010. *Climate Change, 114*, 169–188. doi:10.1007/s10584-012-0403-y.

Ceccarelli, L. (2011). Manufactured scientific controversy: Science, rhetoric, and public debate. *Rhetoric and Public Affairs, 14*(2), 195–228. doi:10.1353/rap.2010.0222.

Cook, J., Nuccitelli, D., Green, S.A., Richardson, M., Winkler, B., Painting, R., Skuce, A. (2013). Quantifying the consensus on anthropogenic global warming in the scientific literature. *Environmental Research Letters, 8*, 24024–7. doi:10.1088/1748-9326/8/2/024024.

Cook, J., Oreskes, N., Doran, P.T., Anderegg, W.R.L., Verheggen, B., Maibach, E.W., … Rice, K. (2016). Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. *Environmental Research Letters, 11*, 1–7. doi:10.1088/1748-9326/11/4/048002.

Devitt, A. (1991). Intertextuality in tax accounting: Generic, referential and functional. In C. Bazerman & J. Paradis (Eds.), *Dynamics of the professions: Historical and contemporary studies in writing in professional communities* (pp. 291–303). Madison: University of Wisconsin Press.

Devitt, A. (1993). Generalizing about genre: New conceptions of an old concept. *College Composition and Communication, 44*(4), 573–586. doi:10.2307/358391.

Devitt, A. (2000). Integrating rhetorical and literary theories of genre. *College English, 6*, 698–718. doi:10.2307/379009.

Devitt, A. (2004). *Writing genres*. Carbondale: Southern Illinois UP.

Devitt, A. (2009a). Re-fusing form in genre study. In J. Giltrow & D. Stein (Eds.), *Genres in the Internet* (pp. 27–47). Philadelphia: John Benjamins Publishing Company. doi:10.1075/pbns.188.02dev.

Devitt, A. (2009b). Teaching critical genre awareness. In C. Bazerman, A. Bonini, & D. Figueiredo (Eds.), *Genre in a changing world* (337–351). Fort Collins, Colorado: Parlor Press.

Devitt, A. (2015). Genre performances: John Swales' *Genre analysis* and rhetorical-linguistic genre studies. *Journal of English for Academic Purposes, 19*, 44–51. doi:10.1016/j.jeap.2015.05.008.

Devitt, A. (2016). Uncovering occluded publics: Untangling public, personal, and technical spheres in jury deliberations. In M.J. Reiff & A. Bawarshi (Eds.), *Genre and the performance of publics* (pp. 139–156). doi:10.7330/9781607324430.c007.

Dryer, D.B. (2016). Disambiguating uptake: Toward a tactical research agenda on citizens' writing. In M.J. Reiff & A. Bawarshi (Eds.), *Genre and the performance of publics* (60–79). Logan: Utah State University Press.

Emmons, K.K. (2009). Uptake and the biomedical subject. In C. Bazerman, A. Bonini, & D. Figueiredo (Eds.), *Genre in a changing world* (pp. 134–157). Lafayette: Parlor Press.

Fahnestock, J. (1986). The rhetorical life of scientific facts. *Written Communication, 3*(3), 275–296. doi:10.7330/9781607324430.c003.

Freadman, A. (1994). Anyone for tennis? In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (43–66). London: Taylor & Francis.

Freadman, A. (2002). Uptake. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (39–53). Cresskill Hampton Press.

Freadman, A. (2012). The traps and trappings of genre theory. *Applied Linguistics, 33*(5), 544–563. doi:10.1093/applin/ams050.

Freadman, A. (2014). Where is the subject? Rhetorical genre theory and the question of the writer. *Journal of Academic Language and Learning, 8*(3), A1–A11.

Freedman, A. (1999). Beyond the text. Towards understanding the teaching and learning of genres. *TESOL Quarterly, 33*(4), 764–767. doi:10.2307/3587890.

Freedman, A., & Medway, P. (Eds.). (1994). *Genre and the new rhetoric*. London: Taylor & Francis.

Frow, J. (2014). *Genre* (2nd ed.). New York: Routledge.

Gieryn, T.F. (1983). Boundary-work and the demarcation of science from non-science: Strains and interests in professional ideologies of scientists. *American Sociological Review, 48*(6), 781–794.

Gieryn, T.F. (1995). Boundaries of science. In S. Jasanoff, G.E. Markle, J.C. Peterson, & T. Pinch (Eds.), *Handbook of science and technology studies* (392–443). Thousand Oaks, California: SAGE Publications Inc. doi:10.2307/2095325.

Gifford, R. (2011). The dragons of inaction. Psychological barriers that limit climate change mitigation and adaptation. *American Psychologist, 66*(290–302). doi:10.1037/a0023566.

Giltrow, J. (2002). Meta-genre. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (187–205). Creskill: Hampton Press.

Hamilton, L.C. (2011). Education, politics and opinions about climate change evidence for interaction effects. *Climate Change, 104*(231–242). doi:10.1007/s10584-010-9957-8.

Hornsey, M.J., Harris, E.A., Bain, P.G., & Fielding, K.S. (2016). Meta-analyses of the determinants and outcomes of belief in climate change. *Nature Climate Change, 6*, 622–627. doi:10.1038/NCLIMATE2943.

Hyon, S. (1996). Genre in three traditions: Implications for ESL. *TESOL Quarterly, 30*(4), 863–722.

Kelly, A.R., & Miller, C. (2016). Intersections: Scientific and parascientific communication on the Internet. In A.G. Gross & J. Buehl (Eds.), *Science and the Internet: Communicating knowledge in a digital age* (pp. 221–246). Amityville, NY: Baywood Publishing Company.

Lewandowsky, S., Gignac, G.E., & Vaughan, S. (2012). The pivotal role of perceived scientific consensus in acceptance of science. *Nature Climate Change, 3*, 399–404. doi:10.1038/NCLIMATE1720.

Lewandowsky, S., Oberauer, K., & Gignac, G.E. (2013). NASA faked the Moon landing – Therefore, (climate) science is a hoax: An anatomy of the motivated rejection of science. *Psychological Science, 24*(5), 622–633. doi:10.1177/0956797612457686.

Lewis, G.B., Palm, R., & Feng, B. (2019). Cross-national variation in determinants of climate change concern. *Environmental Politics, 28*(5), 793–821. doi:10.1080/09644016.2018.1512261

Miller, C. (1984). Genre as social action. *Quarterly Journal of Speech, 70*(2), 151–167. doi:10.1080/00335638409383686.

Miller, C., & Devitt, A. (Eds.). (2018). *Landmark essays on rhetorical genre studies.* Oxford: Routledge.

Miller, C., Devitt, A., & Gallagher, V. (2018). Genre: Permanence and change. *Rhetoric Society Quarterly, 48*(3), 269–277. doi:10.1080/02773945.2018.1454194.

Miller, C., & Kelly [now Mehlenbacher], A.R. (Eds.). (2017). *Emerging genres in new media environments*. London: Palgrave Macmillan.

Moser, S.C. (2010). Communicating climate change: History, challenges, process and future directions. *WIREs Climate Change, 1,* 31–53. doi:10.1002/wcc.011.

Moser, S.C. (2016). Reflections on climate change communication research and practice in the second decade of the 21st century: What more is there to say? *WIREs Climate Change, 7*, 345–369. doi:10.1002/wcc.403.

Nisbet, M.C., & Myers, T. (2007). Twenty years of public opinion about global warming. *The Public Opinion Quarterly, 71*(3), 444–470. Retrieved from https://www.jstor.org/stable/4500386.

Nyboe, J.Ø. (2016). The game of the name: Genre labels as genre and signature. *Scandinavian Studies, 88*(4), 364–392.

Oreskes, N. (2004). The scientific consensus on climate change. *Science, 306*, 1686. doi:10.1126/science.1103618.

Oreskes, N. (2010). *Merchants of doubt*. New York: Bloomsbury Press.

Ouariachi, T., Olvera-Lobo, M.D., & Gutiérrez-Pérez, J. (2017). Analyzing climate change communication through online games: Development and application of validated criteria. *Science Communication, 39*(1), 10–44. doi:10.1177/1075547016687998.

Paré, A. (2002). Genre and identity: Individuals, institutions, and ideology. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (57–71). Cresskill: Hampton Press.

Paré, A., Starke-Meyerring, D., & McAlpine, L. (2009). The dissertation as multi-genre: Many readers, many readings. In C. Bazerman, A. Bonini, & D. Figueiredo (Eds.), *Genre in a changing world* (179–193). Fort Collins, Colorado: Parlor Press.

Powell, J.L. (2016). The consensus on anthropogenic global warming matters. *Bulletin of Science, Technology & Society, 36*(3), 157–163. doi:10.1177/027046761770707.

Reiff, M.J., & Bawarshi, A. (Eds.). (2016). *Genre and the performance of publics.* Logan: Utah State University Press.

Segal, J.Z. (2007). Breast cancer narratives as public rhetoric: Genre itself and the maintenance of ignorance. *Linguistics and the Human Sciences, 3*(1), 3–23. doi:10.1558/lhs.v3i1.3.

Segal, J.Z. (2012). Cancer experience and its narration: An accidental study. *Literature and Medicine, 30*(2), 292–318. doi:10.1353/lm.2012.0017.

Skuce, A.G., Cook, J., Richardson, M., Winkler, B., Rice, K., Green, S.A., Nuccitelli, D. (2016). Does it matter if the consensus on anthropogenic global warming is 97% or 99.99%? *Bulletin of Science, Technology & Society, 36*(3), 150–156. doi:10.1177/0270467617702781.

Smart, G. (2016). Discourse coalitions, science blogs, and the public debate over global climate change. In M.J. Reiff & A. Bawarshi (Eds.), *Genre and the performance of publics* (157–177). Logan: Utah State University Press. doi:10.7330/9781607324430.c008.

Supran, G., & Oreskes, N. (2017). Assessing ExxonMobil's climate change communications (1977–2014). *Environmental Research Letters, 12*, 1–18. doi:10.1088/1748-9326/aa815f.

Swales, J. (1990). *Genre analysis. English in academic and research settings*. Cambridge: Cambridge University Press.

Søe, S.O. (2016). The urge to detect, the need to clarify: Gricean perspectives on information, misinformation and disinformation. (PhD). Copenhagen: University of Copenhagen.

Søe, S.O. (2017). Algorithmic detection of misinformation and disinformation: Gricean perspectives. *Journal of Documentation*, *74*(2), 309–332. doi:10.1108/JD-05-2017-0075.

Tachino, T. (2012). Theorizing uptake and knowledge mobilization: A case for intermediary genre. *Written Communication, 29*(4), 455–476. doi:10.1177/0741088312457908.

Taylor, C.A. (1991). Defining the scientific community: A rhetorical perspective on demarcation. *Communication Monographs, 58*(4), 402–420. doi:10.1080/03637759109376238.

Thieme, K. (2006). Uptake and genre: The Canadian reception of suffrage militancy. *Women's Studies International Forum*, *29*, 279–288. doi:10.1016/j.wsif.2006.04.007.

Tillery, D. (2003). Radioactive waste and technical doubts: Genre and environmental opposition to nuclear waste sites. *Techical Communication Quarterly, 12*(4), 405–421. doi:10.1207/s15427625tcq1204_4.

Warren, M.J.C. (2019). *Food and transformation in ancient Mediterranean literature* (Vol. 14). Atlanta: SBL Press.

Wu, J.S., & Lee, J.J. (2015). Climate change games as tools for education and engagement. *Nature Climate Change, 5*, 413–418. doi:10.1038/NCLIMATE2566.

Amy J. Devitt

2 Genre *for* Social Action: Transforming Worlds Through Genre Awareness and Action

Abstract: Redefining genres as social action in the 1980s has led to understanding that genres reflect, shape, and reinforce worlds through the social actions they define and perform. The critical turn in genre studies in the following decades has led to more awareness of genre's power to shape users unknowingly toward a community's norms and values. This chapter argues for extending that critical awareness to critical action. Genres work not only *as* social action but *for* social action. Genres work *for* social action when people act through them deliberately, consciously, and toward desired social ends. This chapter defines and briefly illustrates four means of using genres for social action: genre mindfulness, genre resistance, genre revision, and genre creation. Critical awareness of those social actions can transform everyday social actions that get things done in the world into powerful actions with social and political purpose, actions meant to alter the world in meaningful and even structural ways.

2.1 Introduction

This volume demonstrates that genres matter. Genres matter because they carry with them not just conventions but expectations and norms. Genres matter because they shape the people who use them into particular kinds of actors performing particular kinds of actions. Genres matter because people enact not just a genre but its accompanying system, institutional setting, and cultural values. Genres matter because people may use genres without being aware of genres' ability to support or inhibit their motivations and goals; or people may use genres fully aware of how genres can manipulate those who are unaware. Genres matter.

Genres matter in the climate debate – or any debate – because their conventions, norms, actions, systems, and potential invisibility direct the debate in sometimes unnoticed and sometimes unintentional ways. Rhetorical genre studies of the last thirty years has argued that genres are social actions (Miller, 1984) and established that genres are the ways we do things in the world (Freedman & Medway, 1994).[1] I am arguing here that, because they are social actions and the ways we do things in the

1 For some overviews, see Devitt (2004b), Martin and Rose (2008), Bawarshi and Reiff (2010), and Auken (2015). This body of scholarship is so large today that references in this essay will represent only a few illustrations for readers who wish to learn more.

world, genres shape argument, including and perhaps especially politically charged debate. Although genres can become so normalized that their actions are hard to resist[2], becoming critically aware of genres' effects can lead to more deliberate debate and to more deliberate action. Those who want to make changes in the world need to make those changes against and especially through genres. Genres operate not just *as* social action but *for* social action.

To explain and illustrate genres for social action, I briefly review some key principles of rhetorical genre theory, define four ways of using genres for social action, and offer a few examples of genres in action, with particular reference to this volume's topic of climate debate. In the end, I argue for using critical genre awareness to exploit genres' capacities for creating change in order to make a positive difference in our worlds.

2.2 Genres *as* Social Actions

Calling genres social actions originated with Carolyn Miller's now-foundational 1984 article entitled "Genres as Social Action." Building from rhetorical criticism and especially the insights of Karlyn Kohrs Campbell and Kathleen Hall Jamieson on *Form and Genre* (1978), Miller articulated a semiotic perspective on genre as combusting form and substance into socially meaningful action. Based on Miller's 1984 article, rhetorical genre studies has connected genres less to textual forms than to rhetorical acts. Genres don't just sit there; they do something.

Early studies of workplaces and professions investigated how genres functioned in communities and systems and explained how genres worked to fulfill the community's purposes[3]. Genres developed out of communities' needs and performed typified actions when the task and situation were perceived to be similar to tasks and situations encountered before. As I concluded in my study of "Intertextuality in Tax Accounting" (1991), all the texts tax accountants produce together "describe a genre system which both delimits and enables its work" (353). The notion of genre systems later developed to account for the interactions of genres both within and across communities, including across multiple activity systems, creating complex interplays of genre sets in the performance of large scale institutional or societal social actions (Bazerman, 1994; Russell, 1997).

2 See, for example, articles in Coe, Lingard, and Teslenko (2002), or, more particularly, Luke (1996), Peters (1997), Fuller and Lee (2002), Paré (2002), Segal (2007), Devitt (2009b), among many more studies of genres' ideological power.

3 For example, Swales, (1990), Devitt (1991), Bhatia (1993), Schryer, 1994; Berkenkotter and Huckin (1995), Artemeva (2009).

Most of this genre research observed how genres worked in their communities, seeking to understand the genres from the perspective of their users. For example, in my study of tax accountants' genres, I not only examined the sample texts that tax accountants supplied as examples of the kinds of writing they did; I also interviewed the partners and associates to learn how those users categorized those genres, how they learned to write in the genres, and how those genres operated together for them in genre sets and systems (what Charles Bazerman later elaborated in "Systems of Genre" (1994) and Anne Freadman examines more interactively as uptake (1994, 2002)). Genre researchers observed genres in their native habitats, recording what they observed and interpreting those observations through the lens of the participants.

While observing through the eyes of the users led to a much more complex understanding of how genres acted, genre scholarship was missing a much-needed critical perspective. The genres that resulted from fulfilling community purposes became norms – and normalized. For tax accountants, to continue that example, understanding their texts required understanding "their genre systems and their rhetorical situations, their intertextual references and their underlying epistemologies, their uses and their community functions" (354). The critical perspective on genre that is now so widespread took some time to develop within genre studies, but it has become well established in theory, research, and pedagogy. In the past twenty or more years, genre scholars have built on the turn to genres as rhetorical rather than formulaic and as action rather than form to see genres as not simply functional and community-based but ideological and hegemonic[4].

The happy-sounding "communities" in which genres reside are sites of power and privilege, insiders and outsiders, gatekeeping and access. To succeed in their profession, the novice tax accountants I studied had to learn to write tax memoranda that did what the senior partners expected; had to learn how to distinguish their legal liability in opinion letters from other letters to clients; had to learn when to use memoranda for the files to provide a record of phone conversations and meetings. As Miller (1984) concluded, "what we learn when we learn a genre is not just a pattern of forms or even a method of achieving our own ends. We learn, more importantly, what ends we may have" (165). Though her conclusion at the time may have seemed simply descriptive, today that insight leads to the power of genres to shape novices in the master's image. Genres used in schools act similarly as gatekeepers, shaping how students and teachers should act, thereby defining who belongs and who doesn't. Recognizing that power of genres to define community membership, genre scholars like Ann Johns (1997), Ken Hyland (2004), and John Swales (2004) study the genres of power in schools and other institutions and systems and share that genre knowledge

4 Again, this ideological perspective is particularly emphasized in Luke (1996), Peters (1997), and the collection by Coe et al. (2002); but also Beebee (1994) and Randazzo (2015).

with outsiders to help them gain access to institutions from which they might otherwise remain excluded.

Genres matter not just as gatekeepers but also as enforcers. Every genre carries with it sets of not just formal expectations but also cultural ones, worldviews. Genres have developed out of the values, beliefs, and norms of those in power within the community, institution, and culture. They enforce, as Miller (1984) said, "what ends we may have." Tax accountants in the United States are governed by the Rules and Regulations of the Internal Revenue Service Tax Code; so tax accounting genres defer, refer, and accede to that code. In colleges and universities in the US, Aristotelian logic, evidence, and argument are highly valued, as reflected in their genres of research papers, literary analysis, and thesis-support argument papers, among many others. Scientists believe in research based on established methods, data, and replicable experiments, as reflected in their scholarly articles. Scientific scholarly articles ground their topics in prior research, present their methods, data, and results in clearly distinct sections, and claim only what the data support, with any speculation or implications explicitly labeled as such and heavily hedged. Their students' lab reports similarly describe their methods meticulously, their data in quantified charts and graphs, and their conclusions with ample qualifications and explicit limitations. Operating out of a different culture and worldview with different expectations, politicians value, among other things, followers, visibility, and inclusion in media; hence the passionately delivered speeches with rallying cries and the frequent media interviews containing pre-written sound bites. Genres reflect the values and worldviews of their users, and to use the genre is to accept those values and worldviews.

That acceptance might, however, be unwitting. New tax accountants might not recognize their obedience to the tax codes; new politicians might not see themselves as catering to the media. These novices might just be doing what tax accountants and politicians do. Few students learning to write a research paper probably recognize that they are learning to think like their professors. Some might recognize that they are writing to please a professor ("just tell me what you want"), but some of those students might be horrified if they recognized that in writing to please their professor, they are practicing being like their professor. Students writing a lab report more likely understand that they are taking labs to learn how to conduct an experiment like a scientist, to learn the scientific method; but they learn how to be a scientist through the lab report write-ups as well, learning to write like a scientist. The scientific method includes not just controlling for variables or adding this chemical before that one, but also taking detailed notes during the process, articulating hypotheses, and dis-

tinguishing results from interpretation[5]. Since the values underlying a genre remain largely unstated, taking up the genre takes up those values unaware and uncritically[6].

That genres carry with them unstated assumptions and values applies to their shaping effects on readers as well as composers. Scientific articles position readers to accept the importance of method, the requirement of data, and the limitations of results. Research papers invoke readers who expect logic and evidence, and the genres of tax accountants assume shared belief in the authority of the IRS Rules and Regulations. Without conscious awareness of genres' effects, readers and writers can find themselves inculcated into worldviews they might well have resisted.

But both writers and readers can get it wrong or can deliberately misconstrue, and genre's power to enforce its norms and values has limits (Freadman, 2014; Fuller & Lee, 2002). Writers new to lab reports often mix results, discussion, and conclusions. Student researchers frequently make unsubstantiated statements in their research papers and unwarranted claims in their arguments. Readers of arguments may miss unwarranted claims. Clients receiving a letter from their tax accountant may not recognize that the advice isn't a legal opinion. Readers of scientific reports may, intentionally or unintentionally, miss the limitations or the validity (Smart & Falconer, this volume) of the methods used, not heeding the importance of that genre feature.

Genres in different systems may have clashing values and purposes as well[7]. Journalists reporting on a scientific scholarly article about climate change may exaggerate the scientist's claims, since the news reporters have their own genres with their own values to reflect, like starting with a catchy lede, holding readers' attention, and presenting the news-worthy facts. Politicians may translate the scientific research article into their own genres of sound bites, campaign speeches, legislation, and, increasingly, tweets, all carrying the values of politicians rather than those of the original scientists. Activists and protesters may similarly reduce carefully worded implications in scientific articles to a few words on a poster (as in the protest sign described in the introduction to this volume). The implications of those scientific articles might even become extended to whole universes by writers of speculative fiction, dystopian novels, and cli-fi, with their own motivations and values.

So genres matter. Genres reflect, shape, and reinforce worlds through the social actions they define and perform. Genres carry with them values and norms that, like other ideologies, typically remain largely invisible or unnoticed, and sometimes overlooked. Especially because they are unnoticed, those values, norms, and actions shape readers and writers of genres – that is, all of us in all our interactions. Whether intentional or unintentional, knowing or unknowing, readers and writers then

5 See Schryer (1999) on the experimental article as a shaper of perceptions of time and space.

6 For example, see Bawarshi (2000) on "The Genre Function" and Bastian (2010, 2017) on the difficulty of disrupting that genre effect.

7 See Russell (1997), Winsor (1999), and Bazerman (2004) for more on activity system theory.

attempt to shape others through their choice and use of genres and the values they perform. Becoming aware of genres' effects enables deliberate, conscious, and critical use of genres[8]. Becoming critically aware allows turning genres *as* social action into genres *for* social action.

2.3 Genres *for* Social Action

Genres work *for* social action rather than only *as* social actions when people act through them deliberately, consciously, and toward desired social ends. Genres work *for* social action when communicators actively choose and manipulate the genres they use rather than be used by them. Critical awareness of and deliberate work through genres can transform everyday social actions that get things done in the world into powerful actions with social and political purpose, actions meant to alter the world in meaningful and even structural ways.

I see at least four ways that users can act through genres for deliberate social purposes, *for* social action:

- Genre mindfulness – choosing genres that reflect and reinforce desired worldviews
- Genre resistance – resisting genres that reinforce undesired perspectives
- Genre revision – revising genres to better perform desired actions
- Genre creation – creating new genres to fulfill different purposes and instill different worldviews

These four genre actions can shape what people believe and how they behave. They can, in short, influence people, and they can do so in ways both subtle and dramatic.

One of the clearest sites for studying how genres operate for deliberate and transformative social action is in political debate and social activism. There the role of genres in resistance and the ability to resist genres becomes most deliberate and most visible. The chapters in this volume offer their own illustrations of the roles of genres in the climate debate. In the rest of this chapter, I will briefly sketch some examples of how those four categories of genre actions can influence public debate and activism.

2.4 Genre Mindfulness

Of course, I would prefer that every writer and reader in every situation were critically aware and choosing genres deliberately. Such constant deliberate choosing would surely slow down our operating in the world since we would no longer act automati-

8 As I argue in "Teaching Critical Genre Awareness" (Devitt, 2009b) and elsewhere.

cally in ways we have been trained to act. But it would also create much more mindful interaction. Such mindful deliberate genre choice – genre mindfulness – can be especially effective when trying to influence others. As participants debate the existence, importance, or necessary responses to climate change, the most persuasive may well be those who choose strategies deliberately through choosing strategic genres.

Consider just a few of the many genres designed specifically for social activism, to influence legislators or public opinion – petitions, political cartoons, protest signs, public forums, sit-ins, rallies, marches, letters to the editor, op-eds, opinion columns. Such activist genres promote a culture of public responsibility, of valuing collective action as well as instilling power in individual action. At the same time, each activist genre acts differently, motivating different individual performances, targeting different audiences and using media – and news media – in different ways. Holding a protest sign at a 2017 People's Protest March in Washington saying "There is No 'Planet B' No EPA Cuts!!" (Levenson, 2017) is a different action from writing a letter to the editor of the local newspaper *Lawrence Journal World* in Kansas on "Climate awareness" (Boos, 2017). Choosing a genre chooses strategies and tactics grounded in different societal purposes and values.

Moving activist genres into digital spaces alters traditional genres even as they might be used for similar purposes. Activist political sites like moveon.org promote and distribute online petitions, offer cut-and-paste templates for writing to corporations, and provide talking points and phone numbers to ease the process of calling legislators. An online petition to fight climate change by stopping fracking of fossil fuels acts differently from a petition to stop fracking presented to grocery shoppers in Oklahoma as they leave the store. In addition to genres designed for activism, other existing genres online can be turned toward transformative social action. Social media create multiple platforms for activism, as well as for viral videos and trolling. For example, hashtags and tagging on Twitter, Instagram, Facebook, Snapchat, and newer emerging social media can become political and activist statements: #climatechange is one example at this moment of promoting a hashtag to raise awareness and call for action. Facebook pages, including current ones like NASA Climate Change, can serve as sources of information, but that same genre can be used to promote particular agendas like climate change denial (for example, pages like the current version of Climate Change Discussion). Tweets can promote neutral or civil discussion of important weather events, or they can turn uncivil to promote a political position (Anderson & Huntington, 2017). Existing broad genres can narrow to focus on influencing others – for example, science blogs geared toward political action, campaign and other speeches, and even parody and satire, including news satire. Change to: Leighann Thone's study of the television show of the television show *Last Week Tonight* demonstrates how John Oliver turned passive viewers of news satire shows into political activists, rallying them to use hashtags, write emails and make phone calls, even send money to make political and social points. On an early show from 2014, Oliver presents the science behind climate change and then makes a politi-

cal point visible by staging a "mathematically representative climate change debate" – with three climate skeptics and a room full of scientists waving research papers and shouting scientific research – to demonstrate that the scientific debate is settled (Last Week Tonight, 2014), a performance that one study demonstrated affected viewers' beliefs in global warming (Brewer & McKnight, 2017).

There's nothing new about the existence of activist genres and the ability to use media for activist purposes. But recognizing that genres carry with them values and worldviews, seeing that genres enable or limit particular social actions, such genre mindfulness makes choosing a particular genre a political as well as social act.

2.5 Genre Resistance

That same conscious awareness can lead as well to deliberately resisting genres whose purposes, values, and worldviews conflict with one's own. Resistance can take many forms, from ignoring a genre to countering it with a different genre, and options in between. At its core, genre resistance is a refusal to take up an existing genre, a resistance to acting within it as either reader or writer, consumer or composer. On one end of resistance, for example, critical awareness of news reports as a genre might lead some readers to resist them as sources of scientific information, about climate change or any other potentially hot topic. Some news reports value a sexy lede, so the initial claims might be taken with some skepticism. News reports also work to make information accessible to a wide audience, including those less educated about scientific topics, so readers seeking more complex understandings might look to other genres. News reports consider some facts and statements more newsworthy than others, so genre-aware readers might assume that some scientifically important or at least relevant facts are probably omitted. All genres have their biases and particular purposes. Genre-aware readers can use that fact to seek the genres they need and resist the genres they don't.

Both readers and writers can resist genres. Scientists report their results in scientific articles rather than news reports not only because that's the norm but because the genre fits their values and worldview: scholarly articles support fuller reporting, encourage detailed accounts, and require inclusion of all relevant information, appropriately hedged. When scientists venture into other genres to reach a broader audience, they can meet both their own and readers' resistance. A writer of a textbook like Jeffrey Bennett, writing *A Global Warming Primer: Answering Your Questions About The Science, The Consequences, and The Solutions*, may do an excellent job of presenting scientific information and receive mostly rave reviews on Amazon, but he still may find his emphasis on scientifically sound information derided sarcastically by online reviewers and recategorized as a "cult pamphlet."

Even as they wish to reach more open readers and potentially affect public debate, scientists writing popularizing books may find that genre conflicting with their values

as scientists, a conflict that may lead to their resisting the popularizing genre. Writers of trade books like Malcolm Gladwell, Stephen Pinker, Neil deGrasse Tyson, Daniel Kahneman and others have shown how to adapt expert knowledge to the genre. They lead with anecdotes or illustrative stories instead of previous scholarship in order to gain readers' interest. The limitations of different methodologies may be ignored in favor of clearer conclusions. Complexities sometimes appear in notes at the end of the book instead of in the body. Environmental scientists like Stephen H. Schneider in *Science as a Contact Sport: Inside the Battle to Save Earth's Climate* or Paul Epstein MD and Dan Ferber in *Changing Planet, Changing Health* might adopt that genre's strategies but, given their training, values, and identities, still resist the genre in ways that keep them from reaching as many readers as a journalist like Jeff Goodell in *The Water Will Come: Rising Seas, Sinking Cities, and the Remaking of the Civilized World*, who more easily submits to the genre by telling stories and including personal experience. That is not to say that those scientific trade books are bad, wrong, or false. But they serve different ends and derive from different values.

The same is true for scientists who report their results in science blogs, tweets, LinkedIn or other professional connectors. Each genre embodies different values and perspectives and shapes the writer's information in different ways, some of which suit the writer's values and some of which the writer or readers might resist. Being aware of those generic differences can minimize surprise when a tweet is misunderstood, a blog or trade book receives harsh comments, or a professional post is reduced to its simplest application. Some writers might find that the trade-offs are too great, that a genre conflicts too deeply with the writer's values and motivations. For them, one option is to refuse to write such public genres, just as readers unwilling or unable to listen to scientific research might refuse to read more scientifically complex genres.

For social activists in particular, resisting a genre though ignoring it might not be enough. Stronger genre resistance might mean not simply ignoring a genre but actively introducing another existing genre into the conversation. When university lectures are seen as ideological propaganda (for example in campus speeches by white supremacist Richard Spencer and many others), activists might choose to resist the genre by ignoring the lecture and not attending, but others might confront that genre with protest signs, chants, shouts, and other disruptive genres. At my own university, students resisted a town forum on race led by a former Chancellor, one designed to allow members of the university community to share their experiences and difficulties with race on campus. While the Chancellor attempted to lead an orderly forum with individuals taking turns to tell their stories in polite language and respectful voices, a group of student activists took over the front of the stage with their own signs, loud chants, impassioned spokesperson, and a list of demands for action. Citing a history of calm discussions that had led to no change, the organizers resisted the purpose and values of the respectful town forum by inserting into it the genre actions of protest, rallies, and demands.

Resisting genres, then, is also choosing genres. Resisting a genre may mean choosing not to write or read it – avoiding fake news or sensationalized reporting, for example. Resisting a genre may mean adding to it other genres – seeking out the original scientific articles behind the news report, health newsletter, or viral Facebook post. Resisting genres can also mean offering alternative genres – countering fake news with fact checking, meeting inflammatory political speeches with protest signs, or writing critical reviews of books. As Paré (2002) has noted, such restistance to a genre's worldview can create chinks through which the need for genre change becomes more visible.

2.6 Genre Revision

Using genres for social action does not require either accepting genres as they are, with whatever values and worldviews they might reflect and reinforce, or substituting wholly different genres. Writers constantly revise genres, every time they compose a new and hence unique performance of it (Devitt, 2009a). For deliberately transformative social action, writers can revise genres deliberately toward those purposes, and communities working together can change a genre toward their own ends.

Unfortunately, revising genres to perform actions differently has become a specialty of some who wish to exploit the public's general lack of genre awareness. Notice that many political speeches, in their action to rally supporters and gain media coverage, have become more focused on generating anger and resentment of others, a move supporters might not initially have noticed and may now accept as the new norm. News reports from many sources have exploited viewers' and readers' dependence and perhaps gullibility to revise news reports into biased and often inaccurate accounts, drastically altering the previous values of the genre (and probably creating a different, emerging genre, one that looks superficially like a news report but serves partisanship rather than accuracy and values viewership over integrity). While journalists for long-established newspapers like *The New York Times* and *The Washington Post* (among many, many others) are fighting against this change in news genres, the actions to change those genres are already so well in place that "fake news" may well be its own genre, a revised version of news reports with different values and purposes which journalists can now only resist, not revise (see Tandoc et al. (2017) for a typology of "fake news"). Charles Bazerman details the manipulation from multiple spheres and genres that made their way into government reports, websites, and proposals (Bazerman, 2010). Other genres on platforms previously geared toward social sharing, like Facebook and other social media, have been revised by trolls and haters toward conflict, leaving posters feeling genuine hurt and shock when replies contain personal attacks and verbal assaults. The abuse of these genres, along with the manipulation of public opinion through fake news posts, has led the CEOs of Facebook and other social media corporations to revise the genres themselves, largely

in response to social activists' genre resistance. Genres always change as people use them differently, but not always for the better.

With so many obvious examples of genres being revised for fraudulent and socially unjust purposes, I'd like to offer a quite different and more positive example, a less visible but even more powerful means of performing genre revision by silently refusing to follow the genre's rules even while acting within it. In the United States legal courts, the action of jury nullification revises the genre of jury verdicts in ways that have significant impact on the legal system. According to the legal system, the jury's duty is to return a verdict based solely on the evidence and the law presented. But juries have been known to reject that constraint when they view the law as unjust or the evidence as unfair. In jury nullification, the members of a jury in a trial system decide on a verdict in a way that values their own sense of rightness or justice over that of the law. Jury nullification has been used deliberately to make a comment about a social issue or a particular law, and it has been used to right a perceived wrong. Whether refusing to convict those who illegally liberated or harbored slaves in the 19th century or those who illegally assisted euthanasia in the 20th century, in voting for a verdict based on their own sense of justice, juries are rejecting the legal values inherent in the verdict; they revise the verdict to be an action that values justice instead. Such dramatic revisions of a genre are rare, I suspect, but jury nullification provides an especially dramatic illustration of how a genre can be revised for social action through quieter means with even more impact. Although not yet applied, as far as I know, to the climate change debate or to its laws, resolutions, pacts, agreements, or executive orders, the illustration of jury nullification demonstrates that genres might be revised into actions with quite different values and purposes without necessarily calling public attention to that action.

Revising genres for social action thus requires both recognizing a flaw in the existing genre's purposes or values and acting on that recognition by changing the genre. As these examples illustrate, though, what seems a flaw to some might be an important value to others. Genre revising for transformative social action can rarely, if ever, be achieved alone. The trick to revising genres for social action successfully is twofold: making changes oneself and through one's communities that better serve desirable ends and reinforce desirable values; and others accepting those changes. Revisions can happen subtly, over time, creeping far into the norm before being noticed. Some "news" channels began sensationalizing the news early on, with so many viewers apparently approving of the change that their viewership increased. Other news channels resisted the change in the genre at first, but their conflicting values – accurate reporting versus high ratings – left many succumbing in the end. Voters who resisted the move to stir up anger and hostility stopped listening to those versions of political speeches and sought others to follow, but the strength of the genre's need to motivate voter response left a paucity of alternatives. Genre revision for socially corrupt ends can happen more easily with an unaware public, whose lack of genre resistance becomes acceptance.

Of course, the situation is more complicated than I've described, especially for changing a genre oneself. Most significantly, these genres interact with other genres and especially with genres in other systems, so the forces encouraging or inhibiting change or resistance are multiple and complex. In the case of argument and debate about political issues, media systems and their genres strongly influence political systems and politicians' genres. Rather than creating change on their own, individuals are enmeshed in systems of power and institutional control that cannot simply be ignored without consequence (see Russell, 1997). In fact, it is the interactions of those systems that may create the cracks and chinks that make visible the need for genre change (Paré, 2002). Such clashing systems may have led to changes in scholarly articles in the humanities and social sciences, creating alternative versions of the genre. In scholarly articles, the genre's distancing and "objectivity" began to clash with feminist scholars' valuing of the personal, with feminist, cultural, and qualitative researchers' insistence on the importance of positionality, and with other philosophies' questioning of objectivity. These more particular communities of scholarly research held values and had purposes sometimes at odds with the action of scholarly articles. In some of those communities today, scholarly articles have normalized such values as researchers identifying their positions, including personal anecdotes and accounts, and valuing the voices of study participants as well as researchers. In turn, that revised genre effects changes in the values instilled in new researchers as they learn to write scholarly articles. The revised social action of scholarly articles thus offers new possibilities for transformative social action.

Interconnected and interacting systems of genres thus create space for revising genres for different and powerful social actions, which then reinforce those new actions in others. Genre-aware social activists might do well to seek out spaces where conflicting systems come together, perhaps in digital spaces or newly emerging alliances; to recognize which existing genres represent conflicting values or purposes; to deliberately act to revise those genres toward desired motives and ends; and to spread those revised genres among others in their networks. One simple example might already be visible on Twitter. On that social media platform, like-minded followers of one another have found that their tweets, previously valued for cleverness, humor, and information sharing, are coming into contact with tweets valued for overstatement, capitalized yelling, and ad hominen attacks. In this space of conflicting systems with conflicting values, movements have emerged to change the action of retweeting (sharing others' tweets with your followers) into a practice reserved only for tweets whose values you share rather than ones that are interesting in other ways. To make that process easier to achieve, hashtags like #ClimateAction have been added to identify those of like minds, rather than using hashtags to identify common topics or add humor. That clash of systems on Twitter created a visible chink through which to see how the genre needed to change. Through that awareness, participants were able to revise the genres to better fit newly defined purposes and more strongly reinforce the community's values, then encouraging others to take up the genre in revised

form. Whether the creators and executives behind those social media platforms will take even stronger action to support similar changes remains to be seen.

Once those interacting systems make visible potential clashes of values and purposes, all three strategies of using genres for social action are available. Some might revise the genres, as I've just illustrated, a move that in its extreme, as jury nullification makes clear, can wholly replace an existing genre's worldview. Others might resist the clashing genre rather than revise it, working to ignore it or counter it with other genres, while others might resist the genre and clamor for institutional genre revisions. And others, mindful of a genre's action, might simply choose different genres, walking away from tweets or even all social media, for example, and seek other genres that better fit their needs and values. In the search for other genres that work for desired social actions, a fourth action is sometimes possible – creating new or hybrid genres.

2.7 Genre Creation

Genres rarely appear as new because their origins can usually be seen in previously existing genres (Fowler, 1982; Jamieson, 1975). An exception might well be when new technology creates new media genres with new affordances (Giltrow & Stein, 2009; Miller & Kelly, 2017; Miller & Shepherd, 2004), though even those emerging genres might credibly be viewed as revising existing genres for those new media rather than creating something wholly new. Although the creation of a wholly new genre would seem impossible, since new genres are always already grounded in existing genres, one way of using genres for transformative social action is to perform what seems to be an action not already available, to create a seemingly new genre for new purposes and values. These alternative genres might emerge out of existing genres stretched far beyond their original actions, out of hybridizing two or more existing genres, or, potentially, out of claiming a wholly new social action that calls for a wholly new genre label (see Nyboe (2016) on the importance of genre signatures and what a writer calls a genre).

The genre of news satire might be a case of hybridizing two existing genres to create something new. When Jon Stewart and others began satirizing current events through apparent nightly news shows, they were turning news shows to serve the actions of satire. The resulting genre performed a social action not achieved by news or satire alone. Parodies existed, of course, but news satire did more than parody news. The case of John Oliver's *Last Week Tonight,* mentioned earlier, stretched the genre even further toward not just social satire but social activism.

Some literary genres may be cases of genres claiming new labels in order to perform new actions. The genre of climate fiction or cli-fi, for example, is sometimes a stretching of speculative fiction, but not necessarily. Cli-fi might seem a narrowing of dystopian fiction, but again not necessarily. It might be seen as a hybrid of science

and fiction or of many more genres, but it has become a genre with its unique social action around a shared topic (Bildsøe, 2016). So it does seem possible that newly described genres can develop toward new social actions. Whether traceable to existing genres explicitly or not, the point is that genres can be developed with particular social actions as their purposes and can be added to the genres available for transformative social action.

2.8 From Critical Awareness to Positive Action

To create genres *for* social action is not necessarily to create *positive* social actions. Genres can be used for good or evil, in simple terms, but they too often are perceived as only constraining rather than also enabling (Devitt, 2004a). Becoming aware of genres as social actions and becoming attentive to their underlying values and worldviews can lead to conscious use of genres for transformative social action – whether using genres for one's own desired actions or resisting the genre actions of others. I've outlined four means of turning genres toward social actions – genre mindfulness, genre resistance, genre revision, and genre creation – but each of those (and variations that likely will appear to future scholars) can be used to manipulate as well as to persuade. In intense political debates, in arguments about significant world issues, these capacities of genres must be noticed, critiqued, called out, and reformed. Such debates are too important to leave to those who effectively manipulate genre actions – to those who choose genres that will influence others unconsciously, who resist genres of transparency and reason, who revise existing genres to mask motives or heighten the worst in people, or who create new genres to attack others. The fact that those manipulations seem the dominant ones at some political moments doesn't require giving up. In fact, it requires even more vigilance. If genres are to be used for purposeful social action, conscious awareness of how they operate and alertness to change in progress are the best defenses. (Of course, those are my own values as an academic and intellectual, one who has faith in reason and believes in the inherent rationality of human behavior. Those values and beliefs have certainly been challenged by some events and, in fact, by much of human behavior throughout our species' history.)

With my beliefs and values – and idealism, perhaps – intact, though, I also see people using genres for respectful debate and positive action. I see more people more frequently choosing genres of marches, rallies, protest signs, public forums, petitions, organized letter campaigns, and phone calls to decision makers. I see more active resistance to fake news, viral videos, and trolling, and I see more deliberate revision of tweets, hashtags, and fact checking to create positive alternatives. In short, I see more conscious awareness of genres' effects on beliefs as well as actions and more deliberate use of genres in response.

Once you see how genres are social actions, you should see how genres can be used *for* social action. Once you see genres as ideological and value-laden, you should

see how genres can instill and reinforce desirable as well as undesirable values and norms. I use the "you" here deliberately and knowingly. Along with others, I am arguing that scholars should not just critique but also act on that critique. Now is the time to turn to see genres not just *as* social action but *for* social action. It's not enough just to become aware that genres can be used for social action; it's time to do something about it.

References

Anderson, A.A., & Huntington, H.E. (2017). Social media, science, and attack discourse: How Twitter discussions of climate change use sarcasm and incivility. *Science Communication*, *39*(5), 598–620. doi:10.1177/1075547017735113.

Artemeva, N. (2009). Stories of becoming: A study of novice engineers learning genres of their profession. In C. Bazerman, A. Bonini, & D. de C. Figueiredo (Eds.), *Genre in a changing world* (158–78). WAC Clearinghouse; Parlor Press.

Auken, S. (2015). Utterance and function in genre studies: A literary perspective. In J. Andersen (Ed.), *Genre theory in information studies* (155–78). Bingley: Emerald Group Publishing Limited. doi:10.1108/S2055-537720140000011009.

Bakhtin, M.M. (1986).The problem of speech genres (V.W. McGee, Trans.). In C. Emerson & M. Holquist (Eds.), *Speech genres and other late essays* (60-102). Austin: University of Texas Press.

Bastian, H. (2010). The genre effect: Exploring the unfamiliar. *Composition Studies*, *38*(1), 27–49.

Bastian, H. (2017). Student affective responses to "Bringing the funk" in the first-year writing classroom. *College Composition and Communication*, *69*(1), 6–34.

Bawarshi, A. (2000). The genre function. *College English*, *62*(3), 335–360. doi:10.2307/378935.

Bawarshi, A.S., & Reiff, M.J. (2010). *Genre: An introduction to history, theory, research, and pedagogy*. West Lafayette, Ind.: [Fort Collins, Colo.]: Parlor Press; WAC Clearinghouse.

Bazerman, C. (1994). Systems of genres and the enactment of social intentions. In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (79–101). London: Taylor & Francis.

Bazerman, C. (2004). Speech acts, genres, and activity systems: How texts organize activities and people. In C. Bazerman & P. Prior (Eds.), *What writing does and how it does it* (309–339). Mahwah, N.J: Lawrence Erlbaum.

Bazerman, C. (2010). Scientific knowledge, public knowledge, and public policy: genred formation and disruption of knowledge for acting about global warming. *Linguagem em (Dis) curso*, *10*(3), 445–463.

Beebee, T.O. (1994). *The ideology of genre: a comparative study of generic instability*. University Park, Pa.: Pennsylvania State University Press.

Bennett, J. (2016*). A global warming primer: Answering your questions about the science, the consequences, and the solutions*. Boulder, Colorado: Big Kid Science. https://www.globalwarmingprimer.com/primer/.

Berkenkotter, C., & Huckin, T.N. (1995). *Genre knowledge in disciplinary communication: cognition/culture/power*. Hillsdale, N.J: L. Erlbaum Associates.

Bhatia, V.K. (1993*). Analysing genre: Language use in professional settings*. London; New York: Longman.

Bildsøe, H. (2016). Into an age of cultural contagion: Vampiric globalisation in Mudrooroo's Master of the Ghost Dreaming Series. *Coolabah*, (18), 38–52.

Boos, K., & Lawrence. (2017, December 12). Letter to the editor: Climate awareness. Retrieved February 11, 2018, from http://www2.ljworld.com/news/2017/dec/12/letter-editor-climate-awareness/

Brewer, P.R. & J. McKnight (2017) "A statistically representative climate change debate": Satirical television news, scientific consensus, and public perceptions of global warming. *Atlantic Journal of Communication*, 25:3, 166-180. doi:10.1080/15456870.2017.1324453.

Campbell, K.K., & Jamieson, K.H. (1978). *Form and genre: Shaping rhetorical action.* Speech Communication Association, 5205 Leesburg Pike, Falls Church, Virginia.

CNN, E.L. (April 29, 2017). Climate protest takes on Trump's policies. Retrieved February 11, 2018, from https://www.cnn.com/2017/04/29/us/climate-change-march/index.html.

Coe, R.M., Lingard, L., & Teslenko, T. (Eds.). (2002). *The rhetoric and ideology of genre*. Cresskill: Hampton Press.

Devitt, A.J. (1991). Intertextuality in tax accounting: Generic, referential, and functional. In C. Bazerman & J. Paradis (Eds.), *Textual dynamics of the professions: Historical and contemporary studies of writing in professional communities* (335–357). Madison WI: University of Wisconsin Press.

Devitt, A.J. (2004a). Creative boundaries: An argument for genre as standard, genre as muse. In *Writing Genres* (137–162). Carbondale IL: Southern Illinois University Press.

Devitt, A.J. (2004b). *Writing genres.* Carbondale IL: Southern Illinois University Press.

Devitt, A. (2009a). Re-fusing form in genre study. In J. Giltrow & D. Stein (Eds.), *Genres in the Internet* (27–47). Philadelphia: John Benjamins Publishing Company. doi:10.1075/pbns.188.02dev.

Devitt, A.J. (2009b). Teaching critical genre awareness. In C. Bazerman, A. Bonini, & D. de C. Figueiredo (Eds.), *Genre in a changing world*. Fort Collins, Colo.; West Lafayette, Ind: WAC Clearinghouse; Parlor Press.

Epstein, P.R., & Ferber, D. (2011). *Changing planet, changing health*. Berkeley, California: University of California Press.

Fowler, A. (1982). *Kinds of literature: An introduction to the theory of genres and modes*. Cambridge, Mass: Harvard University Press.

Freadman, A. (1994). Anyone for tennis? In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (43-66). London: Taylor & Francis.

Freadman, A. (2002). Uptake. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (39–53). Cresskill: Hampton Press.

Freadman, A. (2014). Where is the subject? Rhetorical genre theory and the question of the writer. *Journal of Academic Language and Learning, 8*(3), A1-A11.

Freedman, A. & P. Medway (Eds.) (1994). *Genre and the new rhetoric*. London: Taylor & Francis.

Fuller, G., & Lee, A. (2002). Assembling a generic subject. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (207-224). Cresskill: Hampton Press.

Giltrow, J., & Stein, D. (Eds.). (2009). *Genres in the Internet: issues in the theory of genre*. Amsterdam; Philadelphia: John Benjamins Pub. Co.

Goodell, J. (2017). *The water will come: Rising seas, sinking cities, and the remaking of the civilized world*. New York: Little, Brown and Company.

Hyland, K. (2004). *Disciplinary discourses: social interactions in academic writing*. Ann Arbor MI: University of Michigan Press.

Jamieson, K.M. (1975). Antecedent Genre as Rhetorical Constraint. *Quarterly Journal of Speech*, *61*, 406–415. doi:10.1080/00335637509383303.

Johns, A.M. (1997). *Text, role and context: Developing academic literacies*. Cambridge University Press.

LastWeekTonight. (11 May 2014). *Climate change debate: Last Week Tonight with John Oliver (HBO)*. Retrieved from https://www.youtube.com/watch?v=cjuGCJJUGsg.

Luke, A. (1996). Genres of power? Literacy education and the production of capital. In R. Hasan & G. Williams (Eds.), Literacy in society (308–338). London and New York: Longman.

Martin, J.R., & Rose, D. (2008). *Genre relations: Mapping culture*. London and Oakville CT: Equinox Publishing.

Miller, C.R. (1984). Genre as social action. *Quarterly Journal of Speech*, *70*, 151–167. doi:10.1080/00335638409383686.

Miller, C. R. (2017). Where do genres come from. In C.R. Miller & A.R. Kelly [now Mehlenbacher] (Eds.), *Emerging genres in new media environments* (1–34). London: Palgrave Macmillan. doi:10.1007/978-3-319-40295-6_1.

Miller, C.R., & Shepherd, D. (2004). Blogging as social action: A genre analysis of the weblog. In L. Gurak, S. Antonijevic, & L. Johnson (Eds.), *Into the blogosphere: rhetoric, community and the culture of weblogs*. Minneapolis: University of Minnesota Libraries.

Miller, C.R., & Kelly [now Mehlenbacher], A.R. (Eds.). (2017). *Emerging genres in new media environments*. London: Palgrave Macmillan.

Nyboe, J.Ø. (2016). The game of the name: Genre labels as genre and signature. *Scandinavian Studies*, *88*(4), 364–392.

Paré, A. (2002). Genre and identity: Individuals, institutions, and ideology. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (57–71). Creskill: Hampton Press.

Peters, B. (1997). Genre, antigenre, and reinventing the forms of conceptualization. In *Genre and writing: Issues, arguments, alternatives* (199–214). Portsmouth NH: Boynton/Cook.

Randazzo, C. (2015). Hearing silence: Toward a mixed-method approach for studying genres' exclusionary potential. *Composition Forum*, *31*(Spring).

Russell, D.R. (1997). Rethinking genre and society: an activity theory analysis. *Written Communication*, *14*(4), 504–554. doi:10.1177/0741088397014004004.

Schneider, S.H. (2010). *Science as a contact sport: Inside the battle to save Earth's climate*. Washington, D.C.: National Geographic.

Schryer, C. (1999). Genre time/space: Chronotopic strategies in the experimental article. *JAC, 19*(1), 81–89.

Segal, J.Z. (2007). Breast cancer narratives as public rhetoric: Genre itself and the maintenance of ignorance. *Linguistics & the Human Sciences*, *3*(1), 3–23. doi:10.1558/lhs.v3i1.3.

Swales, J.M. (1990). *Genre analysis: English in academic and research settings*. Cambridge [England]; New York: Cambridge University Press.

Swales, J.M. (2004). *Research genres: Explorations and applications.* Cambridge, UK; New York: Cambridge University Press.

Tandoc Jr., E.D., Z.W. Lim & R. Ling (2017). Defining "fake news". *Digital Journalism*, 6:2, 137-153, doi:10.1080/21670811.2017.1360143.

Thone, L. (2020). "Focus your indiscriminate rage in a useful direction": Understanding audience engagement and participation in the news satire genre. [Doctoral dissertation]. University of Kansas.

Winsor, D.A. (1999). Genre and activity systems: The role of documentation in maintaining and changing engineering activity systems. *Written Communication*, *16*(2), 200–224. doi:10.1177/0741088399016002003.

Charles Bazerman

3 Scientific Knowledge, Public Knowledge, and Public Policy: How Genres Form and Disrupt Knowledge for Acting about Anthropogenic Climate Change

Abstract: Knowledge about anthropogenic climate change is produced, stored, and accessed in specific genres associated with different activity systems. Alignment of knowledge across spheres facilitates coordinated action among diverse groups. Our knowledge of the environment has been created in recent history by the interaction of discourses in military, scientific, public, political, corporate and governmental spheres. These spheres do not always work in concert, with significant obstacles and even resistances to communication of knowledge across boundaries. Citizen concerns, expressed in public genres, have been crucial over the last sixty years in creating environmental knowledge, in contrast to governmental or corporate interests, even though government has since taken on major responsibilities for the production, dissemination, and authentication of environmental information. Those with a desire to disrupt remedial action on the environment and more particularly anthropogenic climate change have found disrupting the certainty of knowledge within governmental genres an important tool.[1]

3.1 Introduction

Cooperation on action to mitigate anthropogenic climate change requires the committed engagement of people of many countries with many different interests. Concerted and effective action mitigating climate change requires that these many groups recognize that an urgent problem exists, that the problem has particular characteristics, and that certain actions will likely be effective. Further they must agree that the situation is so dire and of such great priority that they will be willing to sacrifice other valued goods and to make adjustments to well-established ways of life and business.

This alignment over the existence, urgency, and solutions to anthropogenic climate change requires that each of these groups understand, trust, and accept the importance of a series of scientific findings, theories, and projections. To understand, trust, and accept this scientific work requires that they learn to engage with and make sense of the many kinds of professional knowledge that have transformed

1 An earlier version of this chapter appeared in *Linguagem em (Dis)curso*, (2010, 445–463).

our view of the climate. Climate knowledge is grounded within, and gets evidentiary warrant from certain citizen-oriented scientific genres. This knowledge is then taken up (Freadman, 1994, 2002) and operationalized into public, government, and corporate action through other genres. The problems and solutions are only identifiable and persuasive through the forms of evidence, calculation, and reasoning existing in these genres. Insofar as people are not skilled in engaging with these genres they are not able to build trust and engagement with the solutions, even if they accept the authority of the texts and their authors. It is only through these genres that we know, and it is only when we know that we can act with energy and conviction (for the demotivating effects of uncertainty of climate change knowledge see Cook, Lewandosky, & Ecker, 2017; Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007.)

The case of anthropogenic climate change shows how knowledge is produced, stored, accessed, and deliberated upon in specific genres within specific activity-oriented social formations, and then how that knowledge may or may not be transmitted into other activity systems. What is known in one activity system is not immediately and automatically known in another. Genres must exist that allow for the transmission following specific procedures and criteria; further, writers must carry out that work of translation in these intermediary genres (Tachino, 2012). Individuals or groups with stakes in the deliberations of the receiving activity system may then seek to control which knowledge enters into the new system and how it may influence decisions to be made upon that knowledge by contesting the legitimacy of the transmission (Bazerman, 2009, 2013).

The phenomenon of anthropogenic climate change itself cannot be directly and reliably experienced by any individual, nor is it even directly visible from the inspection of typical local weather records (Moser, 2010). Seeing anthropogenic climate change as a phenomenon, let alone recognizing that it poses a problem, requires a kind of professional vision (Goodwin, 1994), seen through the lenses of scientific theories and literature, aggregated planetary data, and computer models. Awareness of our problem depends on projection of future conditions by those computer models, as is identification of potential remedial actions. Without trust in those aggregated data, models, and projections, climate change is hard to recognize. The problem anthropogenic climate change poses has gained widespread attention of the scientific public only in the last four decades and of citizens and governments only in the last two. While there is high agreement in the scientific community and strong consensus that action is needed (see, for example, Cook et al. (2016) and the introduction to this volume), agreement and action consensus among citizens is uneven although increasing as a result of extreme weather events now commonly attributed to climate change (Moser, 2016). Further, cooperation among governments is only recent, and corporate engagement is only sporadic and subordinate to perceived interests. Our future hangs on gaining more consistent engagement with scientifically based knowledge and its policy imperatives.

This essay examines that process of social learning and alignment to relevant scientific knowledge, from a genre and activity theory perspective. In this essay I will be bringing together the work of a number of my prior studies where more detailed evidence and analysis are available (Bazerman, 2001; Bazerman, Little, & Chavkin, 2003; Bazerman & de los Santos, 2005). These studies are based predominantly on events and evidence from the United States, but given the US role in science and in the international economy along with the recurring episodes of US governmental and corporate recalcitrance, the harnessing of US political will is an important element in global negotiations on addressing climate change. Thus, this story is of more than local interest. In addition, because cooperation of people and organizations in every nation is essential for effective global climate cooperation we need similar understandings of the formation of politics and policy in each nation and region.

3.2 Knowledge Resides within Genres

Theoretically, the studies in the present volume are grounded in the idea that knowledge is inscribed, reasoned about, stored, and accessed in specific genres. Bakhtin noted that each genre is associated with a specific time and space, or chronotope, populated by expected types of characters, objects, scenery and other elements, which then are part of an expected set of unfolding of events (Bakhtin, 1981). Some genres in fact exist with the specific aim of producing, warranting, evaluating, or distributing specific forms of knowledge (Bazerman, 1999). Engaged and knowledgeable participants in activity systems know where relevant knowledge is to be found. This is an extension of the observation that most of what we consider knowledge is embodied in linguistically produced artifacts, typically in a written, rather than purely spoken form. Different kinds of knowledge are produced, warranted, and used by particular groupings of people who are bound together by series of publications and related communicative forums in which the typical genres of the groups are produced, rehearsed, and discussed (Bazerman & Rogers, 2008). Further productions are intertextually linked to prior texts and the knowledge produced therein. Evidence, including empirical evidence gathered from outside the textual world, must be gathered and inscribed by methods and forms that are accepted within the knowledge-producing social group. Only then is the evidence available for evaluation and as warrant for further knowledge claims. This production, collection, and mutual articulation of knowledge and evidence within disciplinary or professional forms create the basis of coordinated future action.

When actions require cooperation across many groups of people, it is important that knowledge is taken up from one sphere of coordinated knowledge to another. This is a consequence of the fact that different communicative spaces – particular genres within particular activity systems – gain the attention and belief of different groups of people, and knowledge does not readily flow from one to another. For example,

the rules and purposes of evidence within the law are very different than those of science. If scientific knowledge bears on a court case, elaborate procedures for carrying information across the boundaries transform the nature and particulars of the knowledge as well as their operational effect, often leaving scientists unhappy with what knowledge gets to the courts (see Bazerman, 2009). Thus, large group actions involving many people in many different roles and configurations must somehow coordinate their different kinds of knowledge to share recognition of a problem to be addressed; otherwise, the groups will not be able to act with mutual clarity, conviction, and commitment.

3.3 Knowing the Environment

So how do we know the environment? While we may walk through forests and enjoy the sounds of birds and refreshing breezes, when we talk of the environment we are more likely to have in mind things we have read – in public media drawing on specific scientific literature. Indeed, until recent decades we would not even be likely to refer to ambient nature as an environment, let alone as an interdependent system. Even among scientists the concept of environment was an invention of the mid-nineteenth century (Jessop, 2012) and ecosystem of the 1930's (Willis, 1997). Both remained of limited attention and interest until the latter half of the twentieth, circulating only in a limited set of genres within some biological specializations. Few scientists, let alone policy makers or citizens, had reason to turn to the pages of journals where the concepts resided.

Within the US public sphere, Rachel Carson's drawing together of the work of researchers whose work had not formed a coherent body of knowledge marked the introduction of the idea of environmental threat as she publicized the problems created by DDT and other pesticides. Earlier concerns about pollution, such as air pollution from industrial and vehicle emissions were seen more as problems of direct contamination rather than systemic degradation. Carson herself was a government naturalist, who had written a number of popular books of nature appreciation. In writing *Silent Spring* (1962, 1995), she created a compelling public account that changed the public's ways of viewing their actions as potentially having long-term systemic consequences on the conditions of our life as ramified through complex interdependent processes (see Waddell, 2000 for useful contexts and analyses of Carson's book). The wide circulation of *Silent Spring* created political and policy discussions leading to government regulation of pesticides. This pesticide legislation differed from earlier food and drug regulation by controlling small amounts of chemicals that, though not immediately destructive, would have long range aggregate consequences. This kind of reasoning and the need to have associated regulation gave rise to new scientific specialties such as ecotoxicology that statistically calculated long term results under field conditions in contrast to the controlled laboratory experiments of traditional

toxicology (see Bazerman & de los Santos, 2005 for a study of the divisions and reconciliations that impeded and eventually allowed evidence to travel between genres of these specialties). We can also see the continuing effect of the communicative model Carson created in the introductory comments of Al Gore to the 1995 reissue of *Silent Spring*, indicating the direct genre genealogy of *Earth in the Balance* (Gore, 1992).

> For me personally, *Silent Spring* had a profound impact. It was one of the books we read at home at my mother's insistence and then discussed around the dinner table. My sister and I didn't like every book that made it to that table, but our conversations about *Silent Spring* are a happy and vivid memory. Indeed, Rachel Carson was one of the reasons I became so conscious of the environment and so involved with environmental issues. Her example inspired me to write *Earth in the Balance*, which, not coincidentally, was published by Houghton Mifflin, the company that stood by Carson through all the controversy and that has since earned a reputation for publishing many fine books about the environmental dangers facing our world. (Gore introduction to Carson, 1995)

Concurrently, another set of events was creating a related set of genres at the intersection of science, public issues, and government policy (Bazerman, 2001). We can pick up this story with the Manhattan Project, which developed the atom bomb under conditions of the highest secrecy. Under the exigencies of WWII, academic science, which had been used to the free flow of information, acquiesced to the military discipline of a restricted flow of knowledge. After the Hiroshima and Nagasaki atomic detonations and the end of the war, scientists exerted pressure to allow open access to the scientific findings (Smith, 1965). Advocates of civilian monitoring and democratic decision making also wanted the science to be publicly available. The rapid emergence of the Cold War created new pressures for secrecy, so that major restrictions remained (monitored by the newly-formed Atomic Energy Commission) keeping much of the knowledge about nuclear weaponry and its effects within classified military documents. However less than a decade later, after atmospheric testing of hydrogen weapons produced radiation fallout, public pressure increased for more detailed information about the effects of fallout, particularly strontium 90 (Wittner, 1997). Strontium 90 was chemically similar to calcium, thus fallout onto grasslands was ingested by cows and concentrated in milk. Children drinking milk from contaminated cows would then further concentrate the strontium 90 in their bones and teeth.

After government and military sources remained vague on details about fallout and its effects despite public pressure, an alliance between academic scientists and citizen groups formed in St. Louis to make knowledge available and pressure for limiting testing and the associated nuclear fallout (Sullivan, 1982). The St. Louis Citizens' Committee for Nuclear Information began producing newsletters called *Information,* then *Nuclear Information.* Those newsletters provided scientific knowledge from the perspective of public problems, though presenting the political message only by implication. The selection and organization of the texts, nonetheless, clearly made evident governmental actions were putting citizens at threat by disrupting the safe environ-

ment for human life. The organizers of this movement were self-conscious about advancing citizen science in the public interest, and were gathered by scientists who considered themselves as citizens, rather than being in the employ of government, military or industry. Such scientists would develop their research questions from public need rather than the internal dynamics of science. The direct linkage between this movement and the environmental movement is indicated by the name changes of the newsletter as it transformed into a journal. *Nuclear Information* became retitled *Scientist and Citizen* and then *Environment*. Even as the articles became more technical they kept the focus on public problems (Bazerman, 2001).

The increasing public concern for the environment became a major political issue to which Congress responded with the National Environmental Policy Act of 1970. The perceived lack of information available on which to base policy led to the requirement that an Environmental Impact Statement be produced for any government action that might affect the environment. The adequacy of this new genre created by fiat has been a matter of debate; nonetheless, the genre both monitored actions from the citizen's perspective and expanded the market for the production of such information. Further, it identified governmental agencies as responsible parties for the collection of such information, taking some of the impetus away from grassroots citizen groups (Bazerman et al., 2003).

So in less than twenty-years we had new communication channels that fostered public attention and access to certain kinds of scientific information viewed as relevant for public well-being, particularly because the normal conditions of life were under threat by human actions. These new communicative channels created a market for scientists who would adopt a public interest perspective. These channels in turn fostered new developments within more purely scientific and political communities.

3.4 Knowing about Global Warming

Among the issues taken up in these new communicative spaces was global warming, as it was then called. Awareness of global warming also had begun in military sponsored science. While the concept of greenhouse warming of the atmosphere was first proposed by Fourier in the 1820's and revived by the engineer Callendar in 1850, it initially gathered little attention, and little evidence suggested its reality. Military interests in the Cold War period, however, led to monitoring of the oceans and atmosphere as potential sites of military engagement. Working for the Office of Naval Research, Roger Revelle in 1957 noted that recorded ocean uptake of excess CO2 was less than anticipated, which meant that atmospheric CO2 produced by hydrocarbon combustion would be increasing (Weart 2003, 2008). To track this and similar data the National Center for Atmospheric Research was founded in 1960. In 1970 this agency was reorganized under a new National Oceanic & Atmospheric Administration (NOAA) in the Department of Commerce. Most of the foundational research on

global warming at that time and since has been done by governmental agencies or under related government funding, often tied to national security concerns, though increasingly with attention to the potential disruption of everyday life of citizens in the US and elsewhere. James Hansen, perhaps the leading figure in global warming science, was employed at the NASA Goddard Institute for Space Studies in New York City from 1972 to 2013 and was its director from 1981 until he left the Institute. NASA, although an independent government agency, has been from its founding deeply intertwined with military interests; nonetheless, it has increasingly addressed more general citizen concerns.

Much of global warming research has been based on computer models of global and regional climates, with historic data and projections forward, looking to climate impacts and turbulence, as well as impacts on sea level, agriculture, and other climate sensitive phenomena. Recognition of this broader view of the complex impacts of increasing greenhouse gases has led to the current preference for the term climate change, with the even more recent preference for the term anthropogenic climate change, recognizing the role of humans in producing greenhouse gases. Even today, nonetheless, all three terms are in use by different participants, and in the following historical account I will follow the usage of each participant I am discussing.

Climate models always have a degree of speculation, extrapolation, and simplification so authoritativeness and certainty was an issue from the beginning, with many competing models and projections, using both different data collections and different algorithms. Nonetheless, by the mid 1980's, an increasing numbers of reports raised alarms about potential harm (see http://www.globalwarmingarchive.com/Timeline.aspx). In particular governmental reports from the Environmental Protection Agency in 1983 made public concerns that climate change would begin to be evident in the 1990's with serious consequences for food production and sea levels. *The New York Times* article describing this report had to provide not only an introduction to the scientific principles of greenhouse warming, and a survey of the evidence, but also a discussion of the nature of the computational models with their uncertainties (Shabecoff, 1983). The public needed to be educated into the scientific issues and given a primer on atmospheric science in order to understand the issue, evidence, and specialized form of argument.

The EPA report indicated that by 1983 strong scientific consensus had already emerged that serious climate change would be occurring because of human produced carbon dioxide, though there were some differences on timing and severity. A series of UN sponsored scientific panels also tracked the solidifying scientific consensus. In 1988 the World Meteorological Organization and UN Environment Programme formed the Intergovernmental Panel on Climate Change (IPCC) (http://www.ipcc.ch/). The first assessment report of the IPCC in 1990 expressed some differences and uncertainties about the specific scenarios that might unfold, but confirmed the importance of the issue and established a framework for addressing the climate change issue and gathering data for future reports. The second assessment report in 1995 confirmed

with confidence the existence and magnitude of global warming and offered specific projections. This report formed the framework for deliberations of the Kyoto Protocol in 1997. The third assessment in 2001 presented strong evidence that change had already occurred, examined the mechanisms of the change, and offered options for intervention. The fourth assessment in 2007 noted substantial effects that had already occurred and will be continuing, and offered scenarios that might mitigate the consequences. The fifth assessment in 2014 reported that human activity had raised emissions of greenhouse gases to the highest in history, already impacting human and natural systems, with greater impacts and risks to come, even if emissions were to be stopped immediately. The assessment identified some pathways for mitigation and adaptation to reduce the worst risks, and became a central background document to the Paris Agreement of 2015. The sixth assessment is scheduled to be completed in 2022.

3.5 Knowledge for Policy Action

It is quite unusual for adjudication panels to be formed in science, as codification of knowledge is usually left to implicit processes of review, citation, and incorporation into future work, reviews, and textbooks (Bazerman, 1991). The EPA and IPCC reports, based on panel judgments and circulation among wide numbers of scientists for their approval, indicate firstly the intersection with policy and public concerns and secondly that governmental action and intergovernmental cooperation require a high degree of sharing of knowledge considered authoritative and trustworthy. A citation count or review of the literature is not an adequate sign of scientific agreement for governmental policy action. Rather a governmentally or intergovernmentally authorized body must authenticate findings with the explicit comment of a wide sample of the authoritative scientists in the area.

But scientific 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. Earlier citizen engagement with environmental knowledge had already spread through journalism, specialized reports, and non-fiction public problem policy books by the 1990's laying the grounds for public knowledge and substantial public consensus that climate change was occurring. By 1992, 68% of the US public believed that global warming was real as a phenomenon – a number, that despite a dip in 1994 – has since only increased to around 75% with under 20% skeptical. Recent polls indicate that concern about global warming continues to increase along with belief that effects are already being seen (Saad, 2017). Curiously, however beliefs about scientific certainty lagged behind with 28% of the sampled public believing that there was scientific certainty in 1994, 46 % percent in 1997, 61 % in 2001 and 65% in 2006. The bulk of the other responders, however, rather than exhibiting

belief that scientists were not convinced rather stated they were unsure (58% in 1994, 37 % in 1997, 30% in 1991, and 29% in 2006). This indicates that the overwhelming certainty among scientists, expressed in the 1983 EPA and 1995 IPCC reports was not being communicated clearly to segments of the public, even though awareness of the phenomenon had. In 1994 there was a 29% disparity between citizens' own certainty and their estimate of scientific certainty, 21 % in 1997, 16% in 2001 (Nisbet & Myers, 2007). More recent polling, however, indicates greater public awareness of scientific consensus (Saad, 2017).

Government under the Clinton administration also expressed strong alignment with knowledge about global warming, evident in reports, websites and other documents, as did the Congressional Office of Technology Assessment reports in the early 1990's (though Congress eliminated the agency in 1995). The Clinton Administration was also active in negotiating and supporting the Kyoto protocols in 1997. Vice President Al Gore in particular advanced many environmental initiatives and advocated for the Kyoto Protocol.

3.6 Interfering with what Publics and Governments Know

Republican control of Congress in 1994 and the Bush presidency in 2001 changed the stance of branches of government and their role in the knowledge process, following the interests of the corporate sector. The corporate sector generally resisted the emerging consensus about global warming and did its best to disrupt communication and alignment of knowledge within the public and government. This is the story behind the Republican Congressional opposition in the 1990s, the Bush positions, and the curious anomalies in the public perception of science.

But before we go into the specifics of the activities of the corporate sector, particularly the energy sector, we need to look at the underlying causes of the stance they take toward the environment from a genre and knowledge perspective. Businesses typically have a short to middle range time horizon on making financial decisions to enhance profitability and growth in the foreseeable future, usually from one to eight years (Das, 1987; Naylor & Schauland, 1976). The uncertainty of long range, or even middle range, economic forecasting also mitigates against longer planning. What planning does occur has to rely on historic conditions and trends. Thus, the genres that collect knowledge for decision-making and then attempt to extrapolate forward consider the future much like the past. Projections beyond the immediate upcoming quarters and years fade from view, particularly futures that might incorporate radical changes in conditions. In publicly held companies, further, maintaining or increasing stock prices through growth of quarter-to-quarter profits keeps calculations even more in the near term. This short time frame has been further tightened by the tying of executive compensation to stock prices through options and bonuses. In this short to middle time frame, climate change does not turn up substantially in past or projected

balance sheets and thus does not seriously enter into calculations. Losses through extreme weather and other natural disasters are covered by insurance. At worst, increased risk of climate induced disasters turns up as increased casualty insurance premiums – in most industries not a significant cost. It is only when predictable changes in sales might occur as a result of changing consumer needs and desires (such as a cultural preference for green products) or changes in production costs (such as caused by climate-related agricultural shortages) would the climate really be worth taking into account. Government regulation and other mandated adjustments might put greater pressure on the business model, and thus concerted government action on climate change would be more of a threat to projected profitability (the core goal in corporate economic planning) than direct loss from global warming.

The insurance industry, however, has for centuries had a longer time frame for data gathering and planning. Since its business is built on balancing current income against rarely occurring events, the insurance industry since the seventeenth century has developed actuarial tools of determining long-term costs and risks and matching that to current income and profitability. Accordingly, the insurance industry has developed genres for displaying the long-time frame and calculating profit within it. Even more directly, climate-induced disasters incur direct business expenses and cannot be laid off to anyone else, except maybe the large reinsurers. Therefore, it is quite understandable that insurance, with the reinsurers leading the way, was the first industry to recommend action on global warming. By early 1990s some European insurers became concerned with global warming's impact on their industry (Mollin, 1993). Large reinsurers such as Munich Reinsurance Company hired their own meteorologists and climatologists to prepare internal reports (Mills, 1998). Indeed, the industry began encouraging eco-friendly behavior and basing investments on environmental and sustainability audits (Hoeppe & Berz, 2005).

But for most industries, action to mitigate climate change was calculated to be more costly than the effects of the change itself. Climate change action might even require a fundamental restructuring of industry and restriction on business. The oil, coal, and electrical power industries, in particular, began to pay worried attention to predictions about global warming as early as the late 1970s before any substantial public, political, or public policy awareness had emerged. But as scientific knowledge gained activist, political and even government attention, suppressing information about global warming became less possible. Instead, the energy sector adopted a strategy to disrupt the confidence and direction of the emerging public discussion of what, if anything, needed to be done. This tactic, called agnotology (Proctor & Schiebinger, 2008, see also Michaels, 2008) – the active production of uncertainty – was first developed by the tobacco lobby to maintain the appearance of "controversy" which undermined certainty of knowledge with its imperative for action. The strategy was carried out by producing the appearance of scientific disagreement through magnification of minor differences and the sponsored production of legitimate seeming but questionable research that appeared to contradict more independent and solid

work. Then, on the basis of this manufactured appearance of uncertainty, lobbies could argue for more research, delays in action, or simply avoiding action that might appear as an expensive and unnecessary gamble.

One of the key organizations for this production of disruptive knowledge about global warming became the George C. Marshall Institute, which had previously been engaged in arguing for Reagan's Strategic Defense Initiative, known as Star Wars. Interestingly, two of the key players in this organization as it turned its attention to energy had long experience with the production of quasi science for the tobacco lobby. S. Frederick Seitz, chair of the Marshall Institute, was a consultant to tobacco company RJ Reynolds until 1989. S. Fred Singer, who authored 35 Institute-sponsored articles and books questioning global warming, had also learned this strategy through tobacco research (Oreskes & Conway, 2010). As part of the same strategy, ExxonMobil beginning in 1987 sponsored a series of misleading public statements questioning climate change (Supran & Oreskes, 2017), and after the negotiation of the Kyoto accord funded the "Cooler Heads Coalition" to argue against US ratification.

The energy lobby found its allies in the political sphere where they brought the knowledge disruption tactics first to Congress and then to the Bush administration, so government deliberations also could not be carried out in an atmosphere of scientific certainty. Frank Luntz, a chief Republican political strategist, in a 2002 memo urged the Republicans to "make the lack of scientific certainty a primary issue" (Burkeman, 2003). Republican Senator James Inhofe, who since his election to the Senate in 1994 had called global warming a fraud, in 2003 became chair of the Senate Committee on Environment and Public Works and organized hearings to make that case. When George W. Bush became president, his administration almost immediately announced it would not implement the Kyoto Protocol. Further, the White House then began to participate in the disruption of public certainty about scientific knowledge. Previous reports were expunged from the EPA website, and new scientific reports were edited by a lawyer Philip Cooney who had previously been a lobbyist for the American Petroleum Institute. His handiwork typically involved adding words such as *perhaps*, *maybe*, or *uncertainty* at key locations in scientific reports that had originally been drafted with full certainty (Revkin, 2005). The US National Assessment on Climate Change, mandated by the UN, was near silent on global warming. The 600-page draft of the 2003 report had only six paragraphs on climate change; the White House then deleted five and added a reference to an ExxonMobil-funded study disputing the global warming hypothesis (Revkin, 2003). So as to further disrupt the flow of substantial scientific information, James Hansen, still head of the Goddard Institute, was ordered not to speak publicly on global warming issues. Only under court order, in its closing days, after a four-year delay and too late to influence any policies, did the Bush administration release a legislatively mandated report of the impact of global warming (Revkin, 2008).

The new Obama administration in 2009 realigned with scientific knowledge, with new government reports, websites, and proposals acting in consonance with science.

Extensive scientific data was made publicly available through the websites. The administration supported legislation to decrease carbon dioxide through cap-and trade – which creates economic incentives by setting emissions allowances which can then be traded on a market. Gaining congressional approval, however, presented a challenge and no law emerged, as will be examined in the next chapter in this volume. Nonetheless, the Obama administration engaged in international negotiation in Copenhagen in 2009 and Paris in 2015, resulting in the Paris Agreement, to which the US committed by executive action, avoiding Congressional deliberation. Despite congressional resistance to the accord, the Obama administration began implementing the commitments through his previously initiated Presidential Climate Action Plan and Clean Power Plan.

The election in 2016 of Donald Trump, however, again reversed direction. While Trump earlier in his career had, prior to the Copenhagen climate conference, co-signed a paid advertisement in *The New York Times* on December 6, 2009 calling for action on climate change (Adler & Leber, 2016; Davenport & Lipton, 2017), as a candidate he repeatedly claimed climate change was a hoax for the benefit of the Chinese, scientists, and other interests. Immediately upon his inauguration, the EPA and other governmental sites began to remove climate change data or make it less accessible (Davenport, 2017; Mooney & Eilperin, 2017). In anticipation of the Trump's administration's attempt to change the public record on climate change, scientists began to preserve on independent servers the data from US government websites (Dennis, 2016; Holthaus 2016). Trump also withdrew Obama's Presidential Climate Action Plan and Clean Power Plan (Davenport & Rubin, 2017) and announced his intention to withdraw the U.S from the Paris Agreement. While the Trump administration has obscured where it stands on climate change and climate change denial has regained force with the political right (Davenport & Lipton, 2017), local jurisdictions such as states (Bromwich, 2017), cities, universities, and corporations have aggressively regulated greenhouse gases and invested in green energy and other technologies. Consortia of these local jurisdictions are forming to coordinate their efforts (Tabuchi & Fountain, 2017) and have the potential of entering into international efforts in lieu of national US withdrawal (Hernández & Nagourney, 2017).

So, we are now in a position in the US where different groupings of people know different things, with different collections of knowledge visible within their systems of reasoning, justification, and calculation. This is despite almost all other countries now being in agreement as signatories of the Paris Agreement and implementing related domestic policies, including China, India, and the EU. In the US however, the efforts of different groups pull in different directions and remain uncoordinated, lacking a common understanding of the problems facing society as a whole, let alone how they can pursue their separate interests and concerns within a shared set of facts. The state of knowledge within each of these systems is the product of ongoing epistemic work of creating effective speech acts or contesting the speech acts of others, to

leave sets of facts standing, obliterate others, or create uncertainty to weaken the will and focus of action.

Within the uncertainties that face us as the material, political, and economic situations unfold on the global stage, one thing seems certain: what people do depends on what the social and institutional groups that they participate in know, and that what these groups know is the result of active rhetorical work to represent and justify the knowledge which is the basis of problem definition and action. That struggle for which knowledge gets represented with the certainty that demands action will not end until the problem is considered resolved or moot for all interested parties. For example, at one time the genealogy of various European royal families was a major concern to establish legitimacy of regimes, but now it is mostly moot as political changes have made claims of royal lineage matters mainly for the social register. Similarly, complex identification and parsing of various sins and their place in various circles of hell are no longer much of a theological concern. But the facts of climate change are currently very much of a concern, with impacts for all and needed engagement of all in solutions.

3.7 Final Comments

This chapter highlights how certainty of knowledge comes about through coordinated information within key knowledge genres in each sphere, how certainty expressed in the genres of one sphere does not necessarily translate into certainty of knowledge in others, how alignment of knowledge across the genres of different spheres is necessary for coordinated action on complex matters, and how disruption of knowledge translation can be disruptive of action. With respect to the environment the case of anthropogenic climate change has highlighted the centrality of science as a producer of authoritative knowledge; the necessity and difficulty of getting other spheres to attend to and understand the scientific consensus in order to incorporate the findings into their reasoning; and the power of disrupting that process of shared knowledge construction and deliberation. Further, this case has highlighted the role of the federal government within the US system has taken as a central gatherer, authorizer, disseminator, and site of action calculation – and how disrupting government processes of knowledge can disrupt action initiatives, even when science and the public remain convinced of anthropogenic climate change, and the disruptive insertion of distracting claims and inappropriate doubts is transparently obvious to all players. Not only does disruption of government knowledge stall the internal deliberations and actions of the US government, but also places major obstacles within international climate negotiations.

Finally, while national governments play such a central role in the production, sponsorship, authentication, and dissemination of knowledge as well as its direct use for deliberation on action, we should remember that all governments are beholden to

many forces and pressures. While the US government took on some responsibility for the citizens' need for knowledge and action, citizens as citizens are not its only client. Actions in the name of citizens can often be betrayed or hijacked by other interests, so that citizens must maintain citizen genres of knowledge production and evaluation of knowledge from other spheres. They must then monitor government knowledge and actions within certain genres of inspection and evaluation, and must mount political pressure through various communicative genres to hold the government to its responsibility for maintaining and acting on solid science in the public interest. However, when government defaults or draws back, disrupting what is known from scientists, other actors, such as industry, activists, individuals, and other political jurisdictions can attempt to step in. These in turn may become political forces that will impact the government, as political knowledge is the specialty of governments, and it cannot deny the facts of political forces as long as a semblance of democratic procedures remain. Vote counting, fundraising, actions of other government bodies in a distributed federal system with separation of powers among branches – these form facts that are noted and calculated within democratic governments whether climate knowledge is viewed to be firm or uncertain.

3.8 Postscript

At this time of final editing in the midst of the Covid-19 pandemic, the implications of this study for government and citizen action or inaction are even more immediately salient.

References

Adler, B. & Leber, R. (2016, 8 June). Donald Trump once backed urgent climate action. Wait, what?. *Grist*. Retrieved from http://grist.org/politics/donald-trump-climate-action-new-york-times/

Bakhtin, M.M. (1981). *The dialogic imagination.* Austin, TX: University of Texas Press.

Bazerman, C. (1991). How natural philosophers can cooperate: The rhetorical technology of coordinated research in Joseph Priestley's *History and present state of electricity*. In C. Bazerman & P. Paradis (Eds.), *Textual dynamics of the professions* (13-44). Madison: University of Wisconsin Press.

Bazerman, C. (1999). Singular utterances: Realizing local activities through typified forms in typified circumstances. In A. Trosberg (Ed.), *Analysing the discourses of professional genres* (25-40). Amsterdam: Benjamins.

Bazerman, C. (2001). Nuclear information: One rhetorical moment in the construction of the information age. *Written Communication, 18*(3), 259–295. doi:10.1177/0741088301018003002.

Bazerman, C. (2009). How does science come to speak in the courts? Citations, intertexts, expert witnesses, consequential facts and reasoning. *Law and Contemporary Problems*, *72*(1), 91–120.

Bazerman, C. (2010). Scientific knowledge, public knowledge, and public policy: genred formation and disruption of knowledge for acting about global warming. *Linguagem em (Dis)curso*, *10*(3), 445–463.

Bazerman, C. (2013). A theory of literate action. Fort Collins CO: WAC Clearinghouse.

Bazerman, C., & de los Santos, R. (2005). Measuring incommensurability: Are toxicology and ecotoxicology blind to what the other sees? In R. Harris (Ed.), *Rhetoric and incommensurability* (424-463). West Lafayette IN: Parlor Press.

Bazerman, C., Little, J., & Chavkin, T. (2003). The production of information for genred activity spaces. *Written Communication, 20*(4), 455–477. doi:10.1177/0741088303260375.

Bazerman, C., & Rogers, P. (2008). Writing and secular knowledge apart from modern European institutions & Writing and secular knowledge within modern European institutions. In C. Bazerman (Ed.), *Handbook of research on writing* (143-176). New York, NY: Routledge.

Bromwich, J.E. (2017, June 7). Defying Trump, Hawaii becomes first state to pass law committing to Paris Climate Accord. The New York Times, A1. Retrieved from https://www.nytimes.com/2017/06/07/climate/hawaii-climate-paris-trump.html.

Burkeman, A. (2003, March 4). Memo exposes Bush's new green strategy. *The Guardian*. Retrieved from https://www.theguardian.com/environment/2003/mar/04/usnews.climatechange

Carson, R. (1962, 1995). *Silent spring.* Boston: Houghton Mifflin.

Cook, J., Oreskes, N., Doran, P.T., Anderegg, W.R.L., Verheggen, B., Maibach, E.W., . . . Rice, K. (2016). Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. *Environmental Research Letters, 11*, 1–7. doi:10.1088/1748-9326/11/4/048002.

Cook, J., Lewandowsky, S., Ecker U.K.H. (2017). Neutralizing misinformation through inoculation: Exposing misleading argumentation techniques reduces their influence. *PLoS ONE, 12*(5). doi:10.1371/journal.pone.0175799.

Das, T.K. (1987). Strategic planning and individual temporal orientation. *Strategic Management Journal*, *8*, 203–209. doi:10.1002/smj.4250080211.

Davenport, C. (2017). With Trump in charge, climate change references purged from website. *The New York Times,* Jan. 20, 2017, A20. Retrieved from https://www.nytimes.com/2017/01/20/us/politics/trump-white-house-website.html.

Davenport, C., & Lipton, E. (2017, June 4). How G.O.P. leaders came to view climate change as fake science. *The New York Times,* A1. Retrieved from https://www.nytimes.com/2017/06/03/us/politics/republican-leaders-climate-change.html.

Davenport, C., & Rubin, A.J. (2017). Trump signs executive order unwinding Obama climate policies. *The New York Times*, March 28, 2017, A1. Retrieved from https://www.nytimes.com/2017/03/28/climate/trump-executive-order-climate-change.html.

Dennis, B. (2016, December 13). Scientists are frantically copying U.S. climate data, fearing it might vanish under Trump. *Washington Post*, 1. Retrieved from https://www.washingtonpost.com/news/energy-environment/wp/2016/12/13/scientists-are-frantically-copying-u-s-climate-data-fearing-it-might-vanish-under-trump/?utm_term=.a0125bc5a6fd.

Freadman, A.S. (1994). Anyone for tennis? In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (43-66). London: Taylor & Francis.

Freadman, A.S. (2002). Uptake. In R. Coe, L. Lingard & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (39-53). Cresskill: Hampton Press.

Goodwin, C. (1994). Professional vision. *American Anthropologist, 96*(3), 606–633.

Gore, A. (1992). *Earth in the balance: Ecology and the human spirit.* Boston: Houghton Mifflin.

Hernández, J.C., & Nagourney, A. (2017, June 6). As Trump steps back, Jerry Brown talks climate change in China. *The New York Times,* A1. Retrieved from https://www.nytimes.com/2017/06/06/world/asia/xi-jinping-china-jerry-brown-california-climate.html

Hoeppe, P., & Berz, G. (2005). Risks of climate change--the perspective of the (re-insurance) industry. Power Engineering Society General meeting. *IEEE*, 1367–1370.

Holthaus, E. (2016, December 13). Why I'm trying to preserve federal climate data before Trump takes office: The Trump administration is likely to be hostile to science. *Washington Post*, 1. Retrieved from https://www.washingtonpost.com/posteverything/wp/2016/12/13/why-im-trying-to-preserve-federal-climate-data-before-trump-takes-office/?utm_term=.b79bbb785a4c.

Jessop, R. (2012). Coinage of the term environment: a word without authority and Carlyle's displacement of the mechanical metaphor. *Literature Compass*, *9*(11), 708–720. doi:10.1111/j.1741-4113.2012.00922.x.

Lorenzoni, I., Nicholson-Cole, S., & Whitmarsh, L. (2007). Barriers perceived to engaging with climate change among the UK public and their policy implications. *Global Environmental Change, 17*, 445–459.

Michaels, D. (2008). *Doubt is their product.* Oxford: Oxford University Press.

Mills, E. (1998). The coming storm: global warming and risk management. *Risk Management*, *45*(5), 20–25.

Mollin, H. (1993). Will global warming cool off weather underwriting? *Risk Management*, *40*(3), 28–35.

Mooney, C., & Eilperin, J. (2017, April 29). EPA website removes climate science site from public view after two decades. *Washington Post*, 1. Retrieved from https://www.washingtonpost.com/news/energy-environment/wp/2017/04/28/epa-website-removes-climate-science-site-from-public-view-after-two-decades/?utm_term=.c150863b34e8.

Moser, S.C. (2010). Communicating climate change: history, challenges, process and future directions. *WIREs Climate Change*, *1*(1), 31–53. doi:10.1002/wcc.11.

Moser, S.C. (2016). Reflections on climate change communication research and practice in the second decade of the 21st century: what more is there to say? *WIREs Climate Change*, *7*(3), 345–369. doi:10.1002/wcc.403.

Naylor, T.H., & Schauland, H. (1976). A survey of users of corporate planning models. *Management Science, 22*(9), 927–937. doi:10.1287/mnsc.22.9.927.

Nisbet, M.C., & Myers, T. (2007). Twenty years of public opinion about global warming. *Public Opinion Quarterly*, *71*(3), 444–470. doi:10.1093/poq/nfm031.

Oreskes, N., & Conway, E. (2010). *Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. New York: Bloomsbury Press.

Proctor, R.N., & Schiebinger, L. (Eds.) (2008). *Agnotology: The making & unmaking of ignorance.* Palo Alto CA: Stanford University Press.

Revkin, A.C. (2003, June 19). Report by E.P.A. leaves out data on climate change. *The New York Times*, A1. Retrieved from http://www.nytimes.com/2003/06/19/us/report-by-epa-leaves-out-data-on-climate-change.html.

Revkin, A.C. (2005, June 8). Bush aide softened greenhouse gas links to global warming. *The New York Times*. Retrieved from http://www.nytimes.com/2005/06/08/politics/bush-aide-softened-greenhouse-gas-links-to-global-warming.html.

Revkin, A.C. (2008). Under pressure, White House issues climate change report. *The New York Times*, May 30, 2008, A14. Retrieved from http://www.nytimes.com/2008/05/30/washington/30climate.html.

Saad, L. (2017). Global warming concern at three-decade high in US. *Gallup*, March 12, 2017. Retrieved from http://www.gallup.com/poll/206030/global-warming-concern-three-decade-high.aspx?g_source=CATEGORY_CLIMATE_CHANGE&g_medium=topic&g_campaign=tiles

Shabecoff, P. (1983, October 18). E.P.A. report says Earth will heat up beginning in 1990's. *The New York Times*, A1.

Smith, A.K. (1965). *A peril and a hope: The scientists' movement in America, 1945–47.* Chicago: University of Chicago Press.

Sullivan, W.C., Jr. (1982) Nuclear democracy: A history of the Greater St. Louis Citizens' Committee for Nuclear Information, 1957–1967. University College Occasional Papers, 1. St. Louis, MO: Washington University.

Supran, G., & Oreskes, N. (2017). Assessing ExxonMobil's climate change communications (1977–2014). *Environmental Research Letters*, *12*(8). doi:10.1088/1748-9326/aa815f.

Tabuchi, H., & Fountain, H. (2017, June 1). Bucking Trump, these cities, states and companies commit to Paris Accord. *The New York Times,* A12. Retrieved from https://www.nytimes.com/2017/06/01/climate/american-cities-climate-standards.html.

Tachino, T. (2012). Theorizing uptake and knowledge mobilization: A case for intermediary genre. *Written Communication*, *29*(4), 455– 476. doi:10.1177/0741088312457908.

Waddell, C. (Ed.) (2000). *And no birds sing: Rhetorical analyses of Silent Spring.* Carbondale: Southern Illinois University Press.

Weart, S. (2003, 2008). *The discovery of global warming.* Cambridge MA: Harvard University Press. Retrieved from http://www.aip.org/history/climate/.

Willis, A.J. (1997). The ecosystem: An evolving concept viewed historically. *Functional Ecology*, *11*(2), 268–271. doi:10.1111/j.1365-2435.1997.00081.x.

Wittner, L.S. (1997). *Resisting the bomb: History of the world nuclear disarmament movement, 1954–1970*. Palo Alto CA: Stanford University Press.

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4 How The US Congress Knows and Evades Knowing About Anthropogenic Climate Change: The Record Created in Committee Hearings, 2004–2016

Abstract: Anthropogenic climate change is a global problem requiring international coordination, depending on shared knowledge leading to shared formulation of problems, solutions, and mechanisms of action. Each nation's governmental bodies, however, have their own processes of admitting and evaluating knowledge, defining interests, deliberating, and coming to commitments. This essay examines the transcripts of relevant committee hearings from the 109th to the 115th Congresses to consider what the US Houses of Congress come to know or not know about climate change in their deliberations, within the structures of their procedures and regulations by which discussion is controlled. Committee hearings are an important activity system with corresponding genres for putting on the record information bearing on deliberation and decision making, but what goes on the record in the hearing transcript genre is limited by the questions asked and the witnesses called, both controlled by the committee chair from the majority party. Depending on the party in control and the purview of each committee, fundamental issues may or may not be addressed and members of Congress may or may not be required to go on the record with their views of climate change. Often members of the party opposed to climate change action may nonetheless act in ways consonant with anthropogenic climate change belief, as long as they do not directly address climate change knowledge. On the other hand, this arrangement offers chairs and other high-profile members of certain committees to advance oppositional agendas. Members of the minority party have limited scope to put knowledge relevant to their own positions on the record.

4.1 The Complexity of Congressional Deliberation

In order to understand the context of the control of knowledge within the US Congress and thus the limited attention given to anthropogenic climate change, we need first rehearse some basics of US governance. The United States has separation of powers both at the national level, with divisions among executive, legislative, and judicial branches, and between federal and state jurisdictions. Further, Congress is divided into the Senate and the House of Representatives. These divisions of power mitigate against a unified, stable response to anthropogenic climate change, which would require Congressional approval and Presidential signature. Because of political divisions at the Federal level, the Paris Agreement negotiated by the Executive Branch was never submitted as a treaty for Congressional approval, and only stood

as an executive commitment of President Obama's administration. President Trump has since announced his attention to withdraw from the Paris Agreement. Because of separation of powers between federal and state governance, however, some states, cities, and other jurisdictions have stated their intention to abide by the agreement (Tabuchi & Fountain, 2017).

A core challenge in gaining unified national US commitment to the Paris Agreement or any major international climate agreement has been gaining the agreement of Congress which must approve treaties and laws. Despite the prominence of global climate issues, the scientific consensus, IPCC reports, international meetings and even the Paris accord, and despite extensive hearings on the issue in both houses, Congress has passed no major climate legislation or international agreement, the authoritative formal genres by which action is taken in the legal system. This failure of legislative action affects not only the United States, but all nations attempting coordinated action. This lack of action on the part of Congress, therefore, is a serious puzzle, leaving us to ask if the House and Senate don't know there is a problem. In an institutional sense, this is so, as the following analysis shows.

In contrast, the executive branch, despite differences among officials, can appear unified under the direction of the President, with internal processes and divisions hidden from view. This can result in rapid policy reversals (and changes in administrative genres) with the change in administrations, as has happened between Presidents Obama and Trump with respect to the Paris Agreement. Congress is a different matter, with 435 voting representatives and 100 senators, divided into two parties, with multiple factions and individual interests, each responsive to multiple pressures. Further, deliberations are somewhat transparent with debate, hearings, reports, and votes published regularly.

As a deliberative body Congress has multiple procedures to gather facts to determine what areas under their charge warrant legislative action (see Krehbiel, 1991 for the classic study of the role of information in legislative bodies). Congress regularly receives reports from the Congressional Research Service, the US General Accounting Office, the Congressional Budget Office and other agencies in the legislative and executive branches. Further, each Senator and Representative has staff to gather and select facts they need. Further the Senate and House have organized committees with staffs, procedures, rules, and powers to gather information and expert opinion. Among these procedures are open public hearings, which invite documents and witnesses. The hearings are then transcribed and made public. Among all the information procedures, these hearings and their published transcripts create the most public face of the knowledge commitments of each member of Congress within a deliberative setting, the place they are seen to be engaged in fact-finding.

From this simple, even naive, view hearings could be seen to provide the knowledge upon which rational decisions are made, in the same way that evidence enters into a court through specific rules and procedures (Bazerman, 2009). From a rhetorical perspective (Aristotle, 1991), Congress engages in deliberative rhetoric. From

activity theory (Russell, 1997) and genre perspectives (Bazerman, 1994; Miller, 1984), Congress is an activity system with the object of legislation, where evidence and reasoning would be represented and brought to bear on issues within the genres of deliberation. From a theory of organizational knowledge (Krehbiel, 1991; Nonaka, 1994), the record of hearings indicates what any Congress knows, how it learns, and how it goes about making decisions.

Congress, however, is more than a deliberative body; it is a legal, representative, governmental, and political body. As a legal body it is accountable to rules overseeing its actions. As a representative body each member is accountable to voting constituents, including beliefs, sentiments, and interests of those constituents. As a governmental body, it acts within a system of checks and balances within the separation of powers. As part of a political body, Congress members are accountable to voting constituents and other stakeholders, in order to gain reelection every two years for the House and every six years for the Senate (Arnold, 1990; Mayhew, 2004). Within current political practice, stakeholders include corporations, interest groups, and media who can provide financial, publicity, or other reelection supports, whether or not they are located within any particular Congressional district.

Further, electoral politics are organized through political parties that also provide internal structure within Congress. Party members caucus together, and party leaderships control positions on committees and other privileges that can advance or impede individual careers. In recent decades partisan strategies have diminished deliberative functions and bipartisan committee staffs in order to increase the roles of party leadership (Mann & Ornstein, 2006).

Despite partisan activity systems that control the operations of both houses and that influence the operations of committees as activity systems, members of Congress have a stake in appearing deliberative in the best interests of the nation and their constituencies. Accordingly, they seek placement and seniority on committees of value to their constituencies (Weingast & Marshall, 1988). While we cannot assume a simple deliberative function to the knowledge presented in congressional hearings and memorialized in the genre of public transcripts of hearings, those documents do provide a record of what an overtly deliberative body claims to know as a rationale for action or inaction and a record for accountability. Understanding the processes by which knowledge appears on the record and who controls these processes can illuminate the rhetorical dynamics of Congressional decision-making and give guidance in how to interpret and perhaps influence knowledge that guides legislation.

4.2 Knowledge in Hearings: Theories of Genre, Stasis, and Relevance

Knowledge presented in hearings is constrained and directed by the genres of hearings with associated social situations, the questions or *stases* defined within the *genres*, and what is considered *relevant* to the particular stases of the hearings.

Genre theory identifies that each genre within its appropriate social situation (Miller, 1984; Russell, 1997) activates expectations of information appropriate to the genre, which an effective text would need to address (Bazerman, 2013; Bazerman & Self, 2017; Burke, 1931; Miller & Selzer, 1985). Congressional committee hearings genres include confirmation, legislative (including budgetary), oversight, and investigative, usually held in Washington with full membership of the committee or subcommittee (with absences, noted and unnoted). The printed hearing transcript is prefaced with membership of the committee (and subcommittee where appropriate), table of contents, and sometimes the call and agenda for the meeting. The hearing proper opens with a statement by the committee or subcommittee chair that defines the purposes of the hearing, sets the rules for statements and questioning, and perhaps anticipates the witnesses and their testimony. The chair describes the value of the session and perhaps takes a position. The ranking minority member then typically makes a statement. Other members of the committee also usually have the option of making a statement. Written statements supplementing oral comments or from absent members may also be added to the printed transcript. Witness statements and responses to oral and written questions are also in the printed transcript.

Within these larger generic expectations, the chair defines the specific question for the hearing. In classical rhetoric the framing of this question to be discussed is called the *stasis*. The stasis is the issue that a rhetor chooses to take a stand on and generate arguments about. The traditional stases are *fact*, *definition*, *value*, and *procedure/jurisdiction*. The classical four stases are most clearly seen in legal contexts for which they were developed (Cicero, 1949; Quintillian, 1920). A defense that has compelling evidence that the accused cannot have done the alleged act wants to argue the facts. If, however, the evidence is weak, the defense may argue on the definition of the act, claiming the alleged murder was actually self-defense. Failing that, the defense might argue value, admitting the crime, but saying the act was a good, such as the assassination of a brutal dictator. A last resort is to say the trial is not being carried out properly or the case does not belong in the jurisdiction of the court, and thus the judgment is illegitimate. These stases may operate in non-judicial settings and not follow sequentially but rather be invoked in relation to audience, domain, or genre (Fahnestock & Secor, 1988). In Congressional budgetary hearings the issue of value or jurisdictional legitimacy of programs may be the primary question rather than the program's existence or the underlying conditions addressed by the program. Apart from the four classical stases, the more general idea of stasis helps us identify the issue being held constant or stable for argument.

With hearings, the stasis is frequently revealed in the title of the hearing, along with a stance and burden of proof, as in the March 23, 2007 hearing of the Investigations and Oversight Subcommittee of the House Science and Technology Committee of the 110th Congress, "Shaping the Message, Distorting the Science: Media Strategies to Influence Science Policy." The opening statement by the subcommittee chair Representative Brad Miller then further defines the issue to be considered, the stance embedded in the stasis, and perhaps the weight of the evidence to be presented by witnesses, as in the latter

> The topic of today's hearing is a consorted effort by opponents of measures to reduce greenhouse gas emissions, to bully scientific facts into submission, and, under intense pressure, the facts about global warming caved in and proved much more elastic [...] According to the testimony we will hear today, since 2001, the Bush Administration has been part of the effort to manipulate the public debate about climate change [...]

The opening statement for the minority then identifies the argumentative stance and particular stasis within the larger stasis to be taken by the minority. In this case Representative Dana Rohrabacher diverts the stasis of whether science was suppressed to whether there in fact is a scientific consensus to be suppressed.

> Thank you very much, Mr. Chairman. Let me note if there was ever a case of the pot calling the kettle black, this hearing is that example. For Pete's sakes, we have had tens of billions of dollars over the last 20 years spent on climate change research, and in the last 10 years or so, it may have been 15 years, there is ample evidence, and I will be submitting these quotes for the record, of prominent scientists who have been complaining that they have not been able to get grants if they voice skepticism about the global warming "consensus".

With the choice of witnesses under the control of the majority chair, the minority can assert their views and facts only in their statements, questions, and supplementary documents or perhaps through one or more courtesy witnesses granted by the chair. The chair's power to set the stasis is recognized by the committee members of both parties and some witnesses who often thank the chair for holding a hearing on a particular topic, even when presenting an opposing position. Occasionally as in the case above, a minority member may instead complain about the stasis in order to undermine the kind of evidence that would be collected under it. Both thanks and complaints recognize the power of the stasis to control the information presented as relevant.

Sperber and Wilson (1986, 1995) theorize *relevance* cognitively as what an auditor or reader perceives as necessary to understand a message, tempered by the cognitive effort necessary to process the input. These informational needs and expectations oblige a statement maker to anticipate and provide the information expected by the auditor in as unencumbered way as possible (Grice, 1975), minimizing the cognitive load. While relevance theory is framed in cognitive terms, genre and stasis theories provide a social framing for relevance within organized institutional, political, and

rhetorical settings. In Congressional hearings relevance at the largest level is defined by the overall purposes and rules of the committee, enforced by the chair and the specific genre, such as a budgetary hearing. The framing question or stasis of the hearing further specifies relevance. Each speaker then frames a particular point of response, offering a more local stasis. Within these stases we will examine how the facts of climate change are relevantly placed on the record, or contested, or evaded. We will also examine how other facts related to other stases are made relevant to the record.

4.3 The Committee System, Hearings, and Records of Hearing

While committees have existed since the early years of the Congress, they have become increasingly autonomous under the control of the majority party committee chairs. The committee chair has authority over what business and issues will be placed before the committee, which hearings will be held, how they are framed, and what witnesses appear, although the chair may consult with the ranking minority member or other committee members. Certain kinds of hearings require testimony of particular witnesses, such as confirmation hearings where the candidate appears, or budget and oversight hearings, where the relevant agency head appears. Also often some witnesses are granted the minority as a courtesy.

The basic procedures of committees have been set out in official governmental documents and a few descriptive studies (Galloway, 1959, 1961) along with the career strategies pursued by congressmen in seeking placement on committees (Weingast & Marshall, 1988). Fenno (1973) and Deering and Smith (1997) have studied in greater detail the functions and operations of committees. None of these, however, have given more than passing mention of hearings, nor have they examined how hearings work and what they accomplish, nor the kinds of knowledge they produce with what consequences for Congressional action. Neither has more recent scholarship taken up these issues, despite hearings providing evidence in the study of other topics or specific legislative initiatives. The current study, in the course of studying how evidence of anthropogenic climate change becomes consequential for Congrssional deliberations, is a step toward unpacking how hearings are organized and with what effect in creating institutional knowledge. Perhaps the findings here will revive an interest in the workings and reform of these deliberative processes.

This study is based on a corpus of hearing transcripts as made available at the Government Publishing Office website.[1] These hearing transcripts are not verbatim

1 In the early years of the republic, partial records of congressional deliberations were published in *The Debates and Proceedings in the Congress of the United States* (1789–1824), the *Register of Debates in Congress* (1824–1837), or the *Congressional Globe* (1833–1873). But in 1873 the Congressional Record began providing a fuller transcript of debate in both the house floor and committees (Mantel, 1959).

reports, because they include editing, emendations, written comments, extensions, and additions (Mantel, 1959). Nonetheless, the printed document stands as the permanent record of the deliberations. This study does not look at the political or backroom processes behind the framing of topics or selection of witnesses, nor on the work of the staff members in arranging for and preparing witnesses. Rather this study examines all committee hearing transcripts in both houses of Congress from the 109th Congress starting in 2005 to the 114th Congress ending in 2016 that we have identified as mentioning climate change or related terms. We also include partial hearings of the 115th Congress, relying on the transcripts available as of February 15, 2018. Publication can lag several months behind the actual hearing dates, so the hearings studied extend only into fall, 2017. The period from 2005 to 2017 included various combinations of party control of both Congressional houses and the Presidency, allowing for contrastive study of the effect of differing political alignments.

Using the Government Publishing Office repository of congressional hearings[2] we searched all committees during the 109th through the 115th Congresses that might attend to climate change. We also included the hearing transcripts available for the 115th Congress still in session at the time of this writing. These committees ranged from the obvious Senate Environment and Public Works Committee and House Energy and Commerce Committee to the less obvious Senate Foreign Relations Committee and House Small Business Committee. Within the list of hearings for each of these committees, we identified hearing titles indicating possible mention of climate change, and then searched for the terms *climate change*, *global warming*, *carbon dioxide* or *greenhouse gas*. Even a single mention of any one of these terms would lead to including the hearing transcript in the corpus, resulting in 1372 hearing transcripts collected for analysis. While anthropogenesis was occasionally mentioned, it was not a strongly identifying term; the search terms we used, however, did pick up the instances when anthropogenesis was a topic of concern. Therefore, we did not use it as a search term and in the following narratives we rely on the terms used in the transcripts. Though our procedures may have missed a few hearings, we are confident that we identified virtually all the major discussions of climate change and the overwhelming majority of minor or passing mentions. Figure 1 lists the number of hearings included in the corpus by Congress, House, and committee.

We downloaded each of these hearings and logged it on a spreadsheet by title, committee and subcommittee, major issue of the hearing, and centrality of climate change to the discussion indicated by frequency of mention or implied relation to the primary issue. Each hearing was further characterized as to how climate change

Transcripts of committee hearings, although published by the Government Publishing Office as is the Congressional Record are not officially part of the record, but only an adjunct, and they began being made available for purchase only in 1924 (Schmeckebier, 1925; Schmeckebier & Eastin, 1969).

2 https://www.gpo.gov/fdsys/search/home.action

Figure 1. Hearing Transcripts Included in Corpus for Analysis

Congress (Years)	109th (2005-6)	110th (2007-8)	111th (2009-10)	112th (2011-2012)	113th (2013-14)	114th (2015-2016)	115th (partial, 2017)
House of REPRESENTATIVES (Total)	22	98	146	121	127	82	46
Agriculture	0	0	8	2	0	1	3
Appropriations	0	5	25	16	16	6	5
Armed Services	0	0	1	0	0	0	1
Budget	0	1	0	0	0	0	0
Education and Labor	0	1	1	0	0	0	0
Energy and Commerce	8	16	12	51	32	17	6
Foreign Affairs	0	0	5	1	10	2	2
Natural Resources	12	18	22	16	27	15	14
Oversight and Government Operations	0	7	0	9	5	6	1
Science (Science and Technology; Science, Space and Technology	2	28	34	21	32	35	14
Select Committee on Energy Independence and Global Warming		11	20				
Small Business	0	1	2	4	2	0	0
Transportation and Infrastructure	0	8	12	1	2	0	0
Ways and Means	0	2	4	0	1	0	0
SENATE (total)	68	144	149	93	141	95	30
Agriculture, Nutrition, and Forestry	1	1	1	0	0	3	0
Appropriations	12	39	37	26	44	28	6
Banking, Housing, and Urban Affairs	0	0	4	0	0	0	0
Commerce, Science, and Transportation	10	2	9	3	23	1	2
Energy and Natural Resources	27	36	42	50	48	36	0
Environment and Public Works	18	59	49	14	26	26	22
Finance	0	1	0	0	0	0	0
Foreign Relations	0	4	7	0	0	0	0
Health, Education, Labor, and Pensions	0	1	0	0	0	0	0
Indian Affairs	0	0	0	0	0	1	0
Small Business an Entrepreneurship	0	1	0	0	0	0	0

Total House Hearings mentioning Climate Change Issues examined=652
Total Senate Hearings mentioning Climate Change Issues examined=720

was presented by supporters and resistors of action. The analysis was carried out by determining the stasis of the hearing from the opening statements, and then examining each invocation of each of the key terms to see who was using it, whether in support or contestation, in what argumentative context, as part of establishing what position.

4.4 Historical Analyses

An historical analysis of hearings reveals how, within the relatively stable genres of hearings, committee chairs control stases in response to changing partisan control, political strategies, legislative priorities, and events within government, the country, and internationally.[3] Within the defined issues of hearings we can see how individual members attempt to narrow or reorient the stases to advance their positions. The knowledge presented and recorded is determined by relevance to the questions that chairs ask and contested by members. The following summative narratives for each of the 109th to 115th Congresses characterize the political control, internal and external

3 Pace and issues for hearings are to some degree also shaped by the two-year electoral calendar, with a surge of new hearings during the first months of a new Congress asserting the themes or positions of the newly elected majority. Confirmation hearings also tend to be bunched at the beginning of the four-year Presidential term. After the summer break for the remainder of the first year, hearings tend to decrease, and are further reduced in the second year as possibilities of action become more limited and reelection takes more of the attention. Certain work, however, must be carried out throughout the term, such as budget hearings.

events impacting hearings, and the framing of hearing stases that influence the published record of Congressional knowledge.

The narratives presented below for each Congress are complex because of the different positions not only of the political parties, but also the different committees in the two houses and even of individual members. Further as elections changed control of the houses of Congress and the Presidency and events outside of the US government changed the situation, responses in Congress also changed. We have necessarily left out much and focused on major differences, but still each of the stories is hard to encapsulate in a few sentences. To help readers follow the summative narratives, for each Congress we provide a table quantifying the number of relevant hearings in each committee, the number where climate change was a central or major issue or assumption, and whether there was any opposition. We characterize the levels of expressed opposition as follows: 1) Contesting the science or scientific processes; 2) accepting the science but opposing action on other grounds, such as the costs or inefficacy of regulation, the preference for technological and free market solutions, or the difficulty of gaining international cooperation leaving the US at a disadvantage; 3) not opposing climate change action but arguing for protection of coal or other fossil fuels; 4) no opposition or contestation. For the purposes of counting, cases where two or three of these kinds of arguments were made, the hearing was assigned only the most oppositional of the categories, so that, for example, hearings with contestations on the basis of science, government overregulation, and concern for the coal industry would be counted under contestation to science. Thus protection of the interests of coal and other fossil fuel industries was far more pervasive than the numbers might suggest.

4.5 109th Congress (2005-2006)

As Republican President George W. Bush began his second term, both houses of Congress were under Republican control with 230 votes to 203 Democratic votes, and the Senate 55 to 45.[4] The previous Third IPCC report was four years old, and did not create new exigency for comment, and concerns about extreme weather events such as Hurricane Katrina were deflected by the difficulty of attributing any particular storm or series of storms to long-term climate change.

4 The party alignment numbers reported for this and following Congresses reflect the alignment reported in the Congressional Research Service, updated toward the end of each Congress, but numbers vary slightly over each Congress because of deaths and other departures, special elections, or party switches. These numbers also include independents with the party they caucus with, but not the nonvoting Delegates (American Samoa, District of Columbia, Guam, Northern Mariana Islands, Virgin Islands) and Resident Commissioner (Puerto Rico).

Figure 2. Relevant Committee Hearings in 109th Congress

	Relevant Hearings	Central or Major	science or scientific processes contested	not contested, but action opposed on other grounds	support for coal technologies	no oppositional mention or contestation
House of REPRESENTATIVES (Total)	22	2	3	2	1	16
Energy and Commerce	8	1	2	0	0	6
Natural Resources	12	0	1	2	1	8
Science (Science and Technology; Science, Space and Technology)	2	1	0	0	0	2
SENATE (total)	68	8	8	5	5	50
Agriculture, Nutrition, and Forestry	1	0	0	0	0	1
Appropriations	12	1	0	0	1	11
Commerce, Science, and Transportation	10	1	3	0	0	7
Energy and Natural Resources	27	2	1	3	4	19
Environment and Public Works	18	4	4	2	0	12

Prior to this period, the Bush Administration had largely opposed action on climate change and expressed denial or equivocal positions. It had expunged much climate change information from official websites. Its 2002 Clear Skies Initiative did not address greenhouse gasses or climate change. On the other hand, some executive agencies carried out research and development activities with the aim of minimizing greenhouse gas emissions, although many Democrats saw these actions as too limited.

The Republican Congress also sent mixed messages on its stand on global warming, leading to some weak action. The proposed Clear Skies Act, which followed the administration Clear Skies Initiative and ignored greenhouse gasses, failed to pass in the 108th Congress, and was reintroduced at the start of the 109th in 2005. Hearings in the Senate Environment and Public Works Committee and a subcommittee, however, were framed around "multi–emissions legislation." This stasis allowed minority senators to raise the possibility of regulation of carbon dioxide and other greenhouse gasses, offer evidence on climate change, and question the witnesses on other pollutants about greenhouse gasses. Those opposing including greenhouse gasses in the bill generally did not contest the existence of climate change, instead arguing procedurally that this issue should be addressed in other legislation. The climate change issue led one Republican to vote with the eight Democratic votes to deadlock the committee, killing the proposal.

Instead, Congress rapidly passed with no Senate hearings and only one House subcommittee hearing The Energy Policy Act of 2005[5] which reflected an "all of the

5 The legislation was referred to eight House committees for two days only, April 18–19, 2005, and the bill passed the House on April 21, 249–183 on a bipartisan vote. The Senate moved to consideration of

above" approach to energy, matching incentives for technology to reduce greenhouse emissions with support for the coal industry and hydraulic fracturing. In this hearing, climate change was uncontested and greenhouse gas reduction was regularly cited as a benefit for various energy sources, including coal, though several witnesses and members of the committee criticized the law for not doing enough on climate change. Despite the limitations, this is the only act directed at climate change that passed Congress during the entire period studied, beyond regular agency budget bills.

The limited hearings and the protection of all energy interests in this act meant that Congress members did not need to expose their positions on climate change. Nonetheless, some committees in the Republican majority Congress soon began to take a more activist stand. The Senate Energy and Natural Resources Committee's two hearings on climate change showed unanimous bipartisan recognition that climate change was occurring, with much evidence setting a predicate for further action. In the first, the contested questions with appropriate evidence concerned the pace, degree of human contribution, and nature of solution. A second hearing's stasis was which action--market mechanisms, mandatory government controls, cap and trade, or other means--would be most effective and balance best with economic growth. Also the Senate Commerce Committee formed a special subcommittee on Global Climate Change and Impacts which held a hearing where members, bolstered by the testimony of scientific witnesses, expressed bipartisan agreement on climate change and its dire consequences, the Committee Chair Senator Stevens of Alaska and the Subcommittee Chair Senator Vitter of Louisiana, although both known as conservatives and friends of energy interests, were from states visibly impacted by climate change, as each explained.

The Senate Environment Committee chaired by the outspoken climate change denier Senator Inhofe of Oklahoma, however, framed the issues and established the record quite differently. A hearing on science in environmental policy making presented three witnesses denying climate change, but since the stasis was formed around the reality of climate change, two other witnesses, likely as courtesy concessions to the minority, reported that evidence for climate change was now incontrovertible, formed a scientific consensus, and warranted international action. This hearing left the record on reality of climate change divided and uncertain.

In another hearing Inhofe questioned whether the Kyoto Protocol, which the US had not signed, was faulted, which even climate change advocates had conceded. After evidence about Europe's inability to implement the protocol effectively, the question turned to whether the US administration was nonetheless acting adequately. This question made relevant the presentation of evidence about the pace of climate

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the bill with no committee involvement at all June 11–23, passing on June 28 with an 85–12 bipartisan vote. The conference bill passed both houses in late July and was signed by the President on August 8, 2005.

change and urgency of action, but also allowed consideration of economic costs of regulation and the benefits of technological and market-based solutions. The question of how to best advance US economic interests in the face of climate change also underlay a hearing on an energy partnership with Asian Pacific nations. One of the witnesses[6] notably presented data that the cost of climate change will not fall as much on the richer countries, so it would not be in their interests to sacrifice to serve the interests of the poorer countries. A fourth hearing in the same committee under Inhofe's chairmanship questioned whether the media was stirring alarmism over climate change. In 12 hearings where climate change took a smaller role, however, it went uncontested.

Overall, in the Senate, beyond the hearings, which considered climate change in a high profile way, in the 59 hearings where climate change a minor or incidental role it was almost never contested. In 12 Appropriations Committee hearings, for example, climate change was accepted as part of the mission of the agencies examined, as it was in almost all appropriations hearings in both houses throughout the period studied.

In the House, there was a similar divide in the stance of the hearings in the different committees. The House Oversight Subcommittee of the Energy and Commerce Committee, led by Representative Whitfield of coal state Kentucky held a hearing on "Questions Surrounding the 'Hockey Stick' Temperature Studies." The stasis narrowed further by questioning statistical procedures in the eight-year-old study, as criticized by the first two statistician witnesses. Although minority members and further witnesses pointed out more current studies supported the article's conclusion of rapidly increasing greenhouse effects, this hearing, in questioning methodological and publication procedures presented climate change science as questionable, lacking the clarity needed for action.

Two other house committees, however, considered climate change as an economic opportunity, with bipartisan acceptance of climate change. The Science Committee in considering climate change technology invited testimony about how industry can create profitable solutions and how government actions can affirmatively support that economic growth. A subcommittee of the Natural Resources Committee saw coal's economic future dependent on clean coal technology. In the other eighteen house hearings mentioning climate change in a minor or incidental role, the reality of climate change was never contested. As in the Senate, contestation tended

6 This witness was Danish political scientist Bjørn Lomborg, well known as a climate denier. He was called on at least five times to testify against climate action in committee and subcommittee hearings in the period studied. Other frequently appearing opposition witnesses were the University of Alabama earth scientist John Christy, testifying at least nine times, and the British journalist Lord Monckton, testifying at least three times. These three were also frequently cited in other hearings.

to occur in focused settings led by a few individuals who wished to set down a record of uncertainty.

4.6 110th Congress (2007-2008)

Figure 3. Relevant Committee Hearings in 110th Congress

	Relevant Hearings	Central or Major	science or scientific processes contested	not contested, but action opposed on other grounds	support for coal technologies	no oppositional mention or contestation
House of REPRESENTATIVES (Total)	**98**	**53**	**15**	**12**	**4**	**67**
Appropriations	5	0	1	0	0	4
Budget	1	1	0	1	0	0
Education and Labor	1	0	0	0	0	1
Energy and Commerce	16	14	3	9	3	1
Natural Resources	18	6	2	0	1	15
Oversight and Government Operations	7	6	4	0	0	3
Science (Science and Technology; Science, Space and Technology)	28	14	4	0	0	24
Select Committee on Energy Independence and Global Warming	11	9	1	1	0	9
Small Business	1	0	0	0	0	1
Transportation and Infrastructure	8	1	0	0	0	8
Ways and Means	2	2	0	1	0	1
SENATE (total)	**144**	**67**	**14**	**20**	**13**	**97**
Agriculture, Nutrition, and Forestry	1	1	0	0	0	1
Appropriations	39	7	0	0	1	38
Commerce, Science, and Transportation	2	0	0	0	0	2
Energy and Natural Resources	36	25	0	3	8	25
Environment and Public Works	59	28	14	15	2	28
Finance	1	1	0	0	1	0
Foreign Relations	4	3	0	2	1	1
Health, Education, Labor, and Pensions	1	1	0	0	0	1
Small Business and Entrepreneurship	1	1	0	0	0	1

The election switched control in both houses to Democrats who favored more vigorous action (with 235 votes to 200 Republican votes in the House and 51–49 in the Senate). Additionally, the fourth IPCC assessment released in the early days of the new Congress provided “unequivocal” evidence that climate change was occurring and was driven by human actions. The Bush administration, despite earlier ambiva-

lence, endorsed the report, and Bush in his 2007 State of the Union address referred to the "serious challenge of global climate change." (Bush, 2007) The Supreme Court then ruled that the Environmental Protection Agency could regulate greenhouse gases under the Clean Air Act, even though the Bush administration did not intend to act on this authority (Greenhouse, 2007). With all these conditions favoring action, the Democratic majority proposed a cap and trade system to limit the greenhouse gasses each producer would be licensed to emit. These licenses could then be sold or traded. Legislation, however, faced a threatened Presidential veto, so Democrats turned to the strategy of establishing a compelling record to justify action in the future.

The proposed America's Climate Security Act of 2007 eventually obtained a 48–36 positive vote in the Senate, but failed to reach the filibuster threshold of 60 votes. The filibuster is a procedure in the Senate by which a minority can block debate or vote on a decision (Wawro & Schickler, 2006). While formal floor consideration and vote occurred only in the Senate, the house held related hearings, to make climate change more visible in the record. The number of hearings mentioning climate change increased from the previous Congress in both houses from 22 to 98 in the House and 68 to 144 in the Senate. Hearings where climate change was the central or a major issue increased at an even greater proportion, from 2 to 47 in the house and from 8 to 67 in the Senate. In all committees but one climate change's reality was not seriously contested, though protecting energy interests, was sometimes expressed.

In the Senate even committees apparently peripheral to the issue held hearings on implications for small business or public health. More expectedly, the Senate Energy and Natural Resources committee had 36 hearings related to climate change with 25 centering on climate change issues. In all there was uniform bipartisan acceptance, sometimes explicitly stated, with only a few expressions about protecting coal, clean coal technologies, or specific oil leases. The hearings made relevant extensive data on the reality and impacts of climate change, current initiatives and actions, and other potential solutions. The Appropriations Committee had 39 hearings relevant to climate change with no contestation.

The Senate Environment and Public Works Committee, now under the chairmanship of Senator Boxer with Senator Inhofe the ranking minority member, however, became the center of contestation. With 59 hearings mentioning climate change issues, 24 centered on climate change, with 4 more as a major concern. 24 of these 28 were contested. 24 of the remaining 31 hearings where climate change took a lesser role showed no opposition or contestation. The most complete debate occurred when the stasis addressed direct actions, such the proposed Climate Security Act, policies to decrease greenhouse gasses, and implications for implementation of the Supreme Court decision.

On the first day of the new Congress, in an unusual hearing of this committee, all Senators were invited to present their views and supporting arguments. Of the thirty-four senators who put their views and evidence on the record, 28 affirmed climate change and supported immediate action without reservations. This included

five Republicans, including one member of the committee. Four other Republican members of the committee also affirmed climate change was occurring, but had reservations about the approach to be taken and concern for the impacts of action on the economy. From the committee, only Senator Inhofe actually questioned the reality of climate change and the science behind it, along with one other Republican not on the committee. Three Republicans on the committee who did not testify elsewhere committed to recognition and action on Climate Change.

Inhofe's denial of climate change continued in hearings throughout the term. Four other Republicans at times questioned policy choices, approaches, or economic consequences of particular proposals, but did not contest the reality. The four remaining Republicans on the committee almost never opposed and sometimes supported action. For example, in a hearing devoted to former Vice-President's Gore's testimony on the science and costs of climate change, Senator Inhofe was the sole voice citing scientists to the contrary and asking skeptical questions. Two other Republican Senators spoke in support of Gore's testimony.

The House also had more hearings with little or no contention except for a single committee. Of the 98 hearings in the House, in 67 showed no resistance to the climate change or action. In the 32 instances of resistance or support for fossil fuels 15 involved questioning the certainty or meaning of scientific findings or processes, and that sometimes only in passing.

Even the Select Committee on Energy Independence and Global Warming, especially created this term by the Democratic leadership, evoked remarkably little contention, even though 9 of 11 hearings considered climate change as the central challenge, in considering geographic and economic impacts, current initiatives, and policy alternatives. The only opposition to action was by Representative Sensenbrenner, who at one point questioned anthropogenic causation and elsewhere opposed regulation and argued for free market solutions following what he called the four principles of a Republican solution: tangible environmental benefits to Americans; advancing technology; protecting US jobs; and requiring global participation.

The Science and Technology Committee held 28 related hearings of which 10 had Climate Change as central, including one presenting the findings of the recently released fourth IPCC report. This hearing over three days, presented fifteen scientists, all who took part in the IPCC reports, allowing full and direct presentation of the current case for climate change. The findings were not contested, but some representatives argued for technology and free market approaches instead of regulation. In the other hearings of the committee climate change was contested only four other times, in passing, from the disempowered sidelines.

In the eighteen relevant hearings in House Natural Resources committee the story was much the same, with no contestation on such issues as water policy, wildlife, and carbon sequestration. In a shift of venue and stases from the hearings in the Environment Committee in the previous Congress, hearings on distortion of governmental and scientific processes were now carried out in in the House Oversight Committee

and the Science and Technology Committee and focused on suppression of climate science rather than climate change activist biases in science or the media.

The Energy and Commerce Committee was the one House location of major contestation to climate change action in its sixteen hearings mentioning the issue. Ranking Minority Member Joe Barton was the most vocal, but still somewhat muted. Stases on technological and economic opportunity, such as carbon sequestration or alternative fuels evoked no opposition but only evidence of economic potentials, as long as they were not encumbered by what was perceived as burdensome regulation. Other hearings about policy choices such as involving fuel standards, state and local concerns, or international cooperation made some opposition relevant. In two cases questions over the pace of climate change suggested there was no need to rush plans, and in two others there was some questioning over whether dissenting science was ignored. Overall, fifteen of the sixteen showed opposition to proposed actions or concern to protect fossil fuels.

Only three hearings in the Subcommittee on Energy and Air Quality showed direct contestation of climate change. A hearing directly posing the question "Climate Change: Are Greenhouse Gas Emissions from Human Activities Contributing to the Warming of the Planet?" invited negative response and evidence. In a hearing on automobile emissions standards, while all witnesses from auto manufacturers and unions presented themselves as proactive on addressing climate change and emissions, Barton asked skeptical questions about nonanthropogenic greenhouse gases outweighing anthropogenic. Finally, a joint hearing between this subcommittee and a subcommittee of the Science Committee pitched the testimony of Al Gore against that of longstanding climate skeptic Bjørn Lomborg. Gore first laid out the full case for action. Lomborg accepted that climate change is real, but argued that impacts are exaggerated, and that solutions need to ensure that costs do not outweigh benefits or obscure other problems.

So with the switch of control of both houses, the stases move towards acceptance or assertion of climate change. Building the case for major legislation expanded the opportunity for presentations of the positive evidence and created opportunities for opposition. However, the fourth IPCC report and the Bush administration acceptance of climate change made it more difficult for the opposition to argue denial or the science was unsettled. Further, the door was opened to exploring the relevance of climate change to a wide range of issues from health to polar bears to small businesses.

4.7 The 111th Congress (2009-2010)

Figure 4. Relevant Committee Hearings in 111th Congress

	Relevant Hearings	Central or Major	science or scientific processes contested	not contested, but action opposed on other grounds	support for coal technologies	no oppositional mention or contestation
House of REPRESENTATIVES (Total)	**146**	**69**	**30**	**31**	**2**	**83**
Agriculture	8	6	2	2	0	4
Appropriations	25	3	1	3	0	21
Armed Services	1	0	0	0	0	1
Education and Labor	1	1	0	1	0	0
Energy and Commerce	12	11	3	8	1	0
Foreign Affairs	5	4	3	0	0	2
Natural Resources	22	9	4	5	0	13
Science (Science and Technology; Science, Space and Technology)	34	11	11	0	0	23
Select Committee on Energy Independence and Global Warming	20	18	3	11	1	5
Small Business	2	1	0	0	0	2
Transportation and Infrastructure	12	1	0	0	0	12
Ways and Means	4	4	3	1	0	0
SENATE (total)	**149**	**48**	**8**	**26**	**3**	**112**
Agriculture, Nutrition, and Forestry	1	0	0	0	0	1
Appropriations	37	6	0	0	0	37
Banking, Housing, and Urban Affairs	4	1	0	0	0	4
Commerce, Science, and Transportation	9	2	0	0	1	8
Energy and Natural Resources	42	16	1	5	1	35
Environment and Public Works	49	16	7	19	1	22
Foreign Relations	7	7	0	2	0	5

The election of the Democratic President Barack Obama brought even greater Democratic dominance with 255 votes to 180 Republicans in the House and 59 to 41 in the Senate. The financial crisis of 2008 and health care dominated the legislative agenda. Nonetheless, work continued on cap and trade legislation. As various agencies and programs took a more active concern for climate change, more committees considered it relevant to more hearings, for a total of 149 in the Senate and 146 in the House. Some anticipatory hearings considered how US might position itself in the Copenhagen climate conference in December 2009, but absence of a meaningful agreement was followed by no congressional hearings.

In the Senate the newly perceived extended relevance of climate change is exemplified by the seven hearings in the Foreign Relations Committee directed towards US leadership at the Copenhagen conference, cooperation with China, and the role of climate change in national security and global economic recovery. More typically, the Senate Appropriations Committee had 37 hearings with no contestation. The

Energy and Natural Resources Committee's forty-two related hearings contained only sporadic resistance to the climate change agenda. In the fourteen hearings centrally devoted to climate change issues, only one had any questioning of the science, and only three others raised economic costs or problems with regulatory solutions. Based on hearings in the previous congress in July 2009 the committee passed the America's Climate Leadership Act of 2009 by a 15–8 bipartisan vote. Without 60 votes to overcome the filibuster threshold, however, the full Senate did not vote on it. Other hearings considered house-passed legislation, policies related to water, forest, and energy, funding agencies, and approving nominations, all under the uncontested assumption of the need for action climate change, despite some concerns for the interests of various energy sectors, including coal.

The Environment and Public Works Committee with ranking minority member Inhofe, however, remained the locus of resistance in the 111th Senate. While Inhofe continued to question the science, four other minority members accused the EPA of biased science, claimed regulations were ineffective and harmful, complained about using the Endangered Species Act to carry out climate policy, and argued the priority of economic growth over climate issues. Two other minority members of the committee, however, did not object to action. In all twelve hearings where climate change was the central issue, and four where it was a major concern showed some contestation. In November 2009, nonetheless, the Committee passed a version of the house bill, renamed the Clean Energy Jobs and American Power Act of 2009, by a vote of 11–1 with all Republicans boycotting. This bill also failed to overcome the filibuster threshold for a full Senate vote. In all 22 hearings where climate change only took a minor or incidental role, there was no contestation.

In the House, while anticipation of Copenhagen and major legislation also created potential sites of contestation, chairs strategically controlled stases to limit opposition. The Select Committee on Energy Independence and Global Warming continued as a key site for considering climate change with all 20 of its hearings mentioning it and 18 centrally focusing on it or relying on it as a central assumption. All members of the committee regularly reiterated bipartisan agreement on climate change, with contestation limited to policy differences. In four hearings preparing for Copenhagen, all members shared concern for establishing the US position, including the protection of US intellectual property. In other hearings, all members agreed that fraudulent letters sent to Congress before a vote and black carbon soot were bad and smart grids, resilience and adaptation, clean coal technologies, and jobs were good. But hearings about government programs and regulation allowed questioning of whether government actions were effective, wasteful or harmful. In three hearings on the science itself, however, the minority questioned the IPCC data set, said the science was unsettled, and repeating details of the six-year old Climategate email scandal where some British scientists were accused of manipulating data. In fact, in one hearing Republicans attempted to shift the stasis from examination of the administration position to Climategate.

The Energy and Commerce Committee had 11 hearings where climate change was the central issue, all dealing with energy policy issues, most of them related to the American Clean Energy Security Act of 2009. Each one of these hearings evoked contestation, but carefully framed issues limited the contestation. The initial hearing of the series was devoted to the Climate Action Partnership of industry and NGO leaders testifying how their organizations were working to prevent climate change; no representative picked a fight against such a strong alliance of industrial leaders. The next hearing on the climate crisis, however, did invite contestation whether a crisis existed, and the minority witness presented findings that suggested the science wasn't settled. Since hearings on coal, consumer protection, or offsets, all sought economic efficiency, contestation and supporting evidence concerned only details impacting specific groups. In a lengthy hearing devoted to marking up the drafted bill, discussion focused on particulars of the legislation, with no attention to the science.

In the Science and Technology Committee, with 34 hearings mentioning climate change, 6 where it was central and 5 others a major concern, some minority members contested climate change action, led by the climate change skeptic Representative Rohrabacher. Hearings on water policy, research, clean coal, or other technological fixes evoked no contestation. But others evoked confrontation on the basic science, most notably in a hearing on monitoring emissions, which created an opportunity to discuss whether there was a scientific consensus on climate change. In another hearing "A Rational Discussion of Climate Change" nine majority witnesses presenting a full scientific case were countered by three minority witnesses, claiming that climate change was slower and less pressing than predicted, that scientific consensus was lacking, and that the Climategate email scandal discredited advocates. The email scandal comes up in other hearings, as do other claims of politicization of science. Overall 11 hearings include some claim about the insufficiency, lack of consensus, or bias of the science. Even the Ways and Means committee, which rarely held hearings related to climate change, had four where climate change was central, three of which had some skepticism about science.

The House Oversight and Government Reform Committee, on the other hand, held no hearings related to climate change. The Democratic committee chair did not wish to raise questions about the scientific process, government support of it, or media presentations. Two hearings in the Small Business Committee seeing opportunities in new energy sources, and 12 in the Transportation Committee examining impacts of climate change for planning also evoked no contestation. The House Appropriations Committee, in its 25 relevant hearings, showed little substantive challenge to climate change or action, though four had passing comments on unsettled science or misplaced priorities.

In both houses, the stases were uniformly directed towards expanding the relevance of climate change to a wider range of issues, taking action, and passing major legislation, though the latter ultimately failed. The hearings developed a broad record

of evidence. In the Senate this record was only contested in one committee, while in the House, the minority in a number of committees sought within hearing stases to question both science and policies. The committee chairs, however, used control of stases to narrow contestation.

4.8 112th Congress (2011-2012)

Figure 5. Relevant Committee Hearings in 112th Congress

	Relevant Hearings	Central or Major	science or scientific processes contested	not contested, but action opposed on other grounds	support for coal technologies	no oppositional mention or contestation
House of REPRESENTATIVES (Total)	**121**	**18**	**7**	**58**	**7**	**49**
Agriculture	2	1	0	1	0	1
Appropriations	16	0	0	5	2	9
Energy and Commerce	51	13	2	28	2	19
Foreign Affairs	1	0	0	0	0	1
Natural Resources	16	0	2	4	0	10
Oversight and Government Operations	9	2	0	6	2	1
Science (Science and Technology; Science, Space and Technology)	21	2	3	10	1	7
Small Business	4	0	0	4	0	0
Transportation and Infrastructure	1	0	0	0	0	1
SENATE (total)	**93**	**14**	**2**	**10**	**1**	**80**
Appropriations	26	5	0	0	0	26
Commerce, Science, and Transportation	3	1	0	0	0	3
Energy and Natural Resources	50	7	1	6	1	42
Environment and Public Works	14	1	1	4	0	9

The election gave Republicans control of the House with 241 votes to 192 voting Democrats. The Senate, however, maintained a Democratic majority of 53 votes to 47 Republicans. Though the Democratic President Obama continued in office, the Republican House eliminated the possibility of major climate change legislation, thereby decreasing exigency to connect climate change to a range of other issues and initiatives. Yet, climate change remained an accepted assumption when most matters of ordinary business arose.

Even though the Senate remained Democratic, hearings examining direct action vanished, and the total number of hearings mentioning climate change decreased to 93 from the previous 149. Even more dramatically, it was the central issue in only 6 hearings, down from 37. While the Environment and Public Works Committee remained a site of substantial resistance, the Chair scheduled no hearings where

climate change was the central issue, and there was only one mandatory nomination hearing where it was even a major concern. Ranking Member Inhofe was limited to trying to limit the mandate of the Director of the US Fish and Wildlife Service and the Assistant Secretary of Interior for Fish, Wildlife and Parks on procedural grounds. In an EPA budget hearing Inhofe contested whether CO2 should be considered a pollutant under that agency. In a hearing on the Clean Air Act and Jobs, two witnesses in passing raised uncertainties about the degree and pace of climate change. In the eleven other hearings, where climate change was mentioned in passing, only once did Inhofe mention the wasted expenses of regulation. The other minority members did not even raise objections throughout the term.

The Energy and Natural Resources Committee did have five hearings where climate change took a central role, down from thirteen in the previous Congress. These addressed only mitigating impacts (such as on water resources) or protecting interests of coal through clean energy technology, rather than combatting climate change directly. In all these there was no contestation of climate change. In the forty-five other hearings where climate change had a lesser role, only six had minor skeptical asides. In the 26 hearings in the Senate Appropriations committee on the budgets of various agencies, climate change was unquestioned as part of the agencies' work.

The Republican-controlled House, however, created hearing stases calling into question overregulation, mismanagement, and scandal involving climate change initiatives. Yet the facts of climate change or human causation were little questioned. The elimination of the Select Committee on Energy Independence and Global Warming both removed a venue to advance climate change regulation and delinked climate change from energy independence.

The renamed Science, Space and Technology Committee had previously established evidence for climate change, but now focused on removing regulation or advancing economically advantageous technologies in its 21 hearings mentioning climate change. The two hearings where climate took a central role called into question biases in administration science and policy processes, including inappropriate shifting of agency missions. Twelve other hearings overseeing administrative agencies and budgets raised similar questions.

The Small Business Committee's four hearings mentioning climate change took stases from the costs of environmental regulation for small business, such as "Are Excessive Energy Regulations and Policies Limiting Energy Independence, Killing Jobs and Increasing Prices for Consumers?" The Oversight and Government Reform Committee's nine hearings similarly examined the job and economic costs of regulation, with such titles as "How Obama's Green Energy Agenda is Killing Jobs." In these hearings the relevant facts concerned ineffective government actions, costs to businesses and the economies, and anecdotes that highlighted regulatory overreach. The Democratic members could only object from the sidelines that regulations were needed and were being carried out fairly and moderately.

The House Energy and Commerce Committee, as in the past, was a major locus of contention with 51 hearings, with seven centrally focused on climate change and six others treating it as a major concern, but stases switched to jobs and the economic consequences of regulation, with a related switch of the relevant facts presented. Many of these hearings were part of a series of 29 hearings on the American Energy Initiative in the Subcommittee on Energy and Power, setting out an economic agenda, including critiques of regulation. In other hearings where climate change was mentioned in lesser roles, the same objections were made concerning burdens and costs of regulation, including scandals and mismanagement. Only one hearing centrally raised the science of climate change with four scientific witnesses presenting evidence of climate change matched with four others that questions doubts about the scientific consensus.

The House Natural Resources Committee, however, was much quieter with less contention, and fewer hearings that mentioned climate change with none where it took a central or major role. Nine had no contestation, four others had passing mention of overregulation or agency bias, and one had a passing accusation that climate change was a hoax with proposed actions a waste of money. The sixteenth climate change related hearings in the Appropriations Committee, while raising questions about the efficiency of the agencies, did not raise any doubts about climate change or the necessity of related programs.

With split leadership between the houses, the Senate did not push a positive agenda in its hearings, just carrying forward existing programs, while the House used hearings to establish the case for a deregulatory, energy growth agenda. Between the two little was added to the record to advance action on climate change, but much was added to the oppositional record, even though the facts of climate change were only sporadically contested.

4.9 113th Congress (2013-2014)

Congress remained divided. The House had 234 Republican votes to 201 Democratic; the Senate had 55 Democratic votes to 45 Republican. The Democratic President Obama, reelected for a second term, announced in June 2013 his Climate Action Plan, to be carried out by executive actions. The Fifth IPCC Assessment Report was finalized in 2014 with parts released over that year. Both these elicited active, but different responses from the two houses of Congress.

In the Senate, as in the previous Congress, with no climate change legislation being pursued, climate change was central to few hearings, and little contestation appeared, except for one committee. The Energy and Natural Resources Committee held 48 hearings mentioning climate change, but only one regionally focused hearing on sustainability goals in the Pacific centrally focused on it. It was a major concern in only seven others, on such issues as drought, water infrastructure, and the nomi-

Figure 6. Relevant Committee Hearings in 113th Congress

	Relevant Hearings	Central or Major	science or scientific processes contested	not contested, but action opposed on other grounds	support for coal technologies	no oppositional mention or contestation
House of REPRESENTATIVES (Total)	**127**	**24**	**6**	**44**	**8**	**69**
Appropriations	16	0	0	0	0	16
Energy and Commerce	32	11	0	19	4	9
Foreign Affairs	10	0	1	0	0	9
Natural Resources	27	2	1	6	0	20
Oversight and Government Operations	5	0	1	4	0	0
Science (Science and Technology; Science, Space and Technology)	32	11	3	15	3	11
Small Business	2	0	0	0	1	1
Transportation and Infrastructure	2	0	0	0	0	2
Ways and Means	1	0	0	0	0	1
SENATE (total)	**141**	**23**	**4**	**19**	**1**	**117**
Appropriations	44	4	0	0	1	43
Commerce, Science, and Transportation	23	2	0	0	0	23
Energy and Natural Resources	48	8	0	10	0	38
Environment and Public Works	26	9	4	9	0	13

nation of the Secretary of Energy. In these, only a few questions were raised about regulations and their costs, impact on coal, or limiting the scope of action of various agencies. The Commerce Committee as in the past showed bipartisan recognition of climate change and support. Of 23 hearings mentioning climate change, it was central only in one on coastline adaptation in Florida, driven by local challenges rather than the larger problem. The Appropriations Committee had 44 hearings with no contestation of climate change.

The Environment and Public Works Committee, however, had seven hearings where climate change was central. These centrally focused hearings mostly addressed the President's Climate Action Plan and the new IPCC report. With titles such "Climate Change: It's Happening Now" the stases made relevant a full review of the evidence for action. With Inhofe continuing as the Ranking Minority Member, 6 of the 7 had some contestation (including 4 contesting the science). Of the total of 26 hearings mentioning climate change, 13 had some form of contestation. Senators Inhofe, Barroso, and Vitter offered some flat denials of the scientific consensus, of a link between climate change and extreme weather events, and of human causation. In other cases, the minority scientific witnesses argued that the costs were not as great as other scientists were projecting, and that adaptation was preferable to aggressive regulation. Elsewhere the concern was the economy, jobs, or the ineffectiveness and harms of regulation.

In the Republican-controlled House, three committees--Energy and Commerce; Science, Space, and Technology; and Oversight and Government Reform--actively framed hearings in opposition to climate change. In the other committees, such as

Appropriations (with 16 hearings mentioning the issue), Foreign Affairs (10), and Natural Resources (27), climate change took a back seat and evoked little opposition beyond a few comments on the futility or harms of regulation. In Foreign Affairs, climate change in fact was frequently recognized as a threat to international peace in relation to such issues as water shortage conflicts.

In two of the three committees that contested climate change action in a focused way, the stases were framed on value (coal and the economy) and procedure (the dangers or ineffectiveness of regulation), and not on the evidence of climate change and its impacts. Of the Energy and Commerce Committee's 32 hearings mentioning climate change, 25 raised difficulties with administration actions such as in the hearings on "The EPA's Regulatory Threat to Affordable, Reliable Energy: The Perspective of Coal Communities." The supporters of actions argued for the necessity and value of actions, but they were granted few witnesses beyond the administration officials being-cross examined. Where issues were framed around economic development, however, mention of climate change was let pass without comment. Similarly, the House Oversight and Government Reform committee continued the attack on Obama administration actions in five hearings.

The Science, Space, and Technology Committee, however, continued to question the science. The hearing "Examining the U.N. Intergovernmental Panel on Climate Change Process" presented four witnesses with smaller roles in the IPCC process who reported marginalization of dissident views. The hearing record questioned the authority of the IPCC findings that served to justify Obama administration actions. Of the 32 hearings in this committee involving climate change (including eight as a central issue, with 3 more as a major concern), 21 contested climate change and administrative actions. A recurrent issue was bias in administration science, such as diverting funding from weather monitoring to climate sensing. Most of the 11 noncontested mentions were incidental; only in one budget hearing was climate change a major concern with no contestation.

4.10 The 114th Congress (2015-2016)

During the last two years of the Obama presidency, both houses of Congress came under Republican control, in the House 247 to 187 and the Senate 54 to 46. During this period the Obama administration participated in the Paris Climate Agreement committing nations to self-determined goals for decreasing greenhouse gas emissions. In anticipation of the Paris Conference Pope Francis released an encyclical *Laudato Si*. On December 12, 2015, the agreement was passed by consensus among the negotiating nations, and later signed by 196 nations. Obama committed the US by executive action rather than Congressionally approved treaty. Committee hearings in both houses contested the economic and procedural premises of the agreement, but with little questioning of climate change's existence or the role of human causation. Other

Figure 7. Relevant Committee Hearings in 114th Congress

	Relevant Hearings	Central or Major	science or scientific processes contested	not contested, but action opposed on other grounds	support for coal technologies	no oppositional mention or contestation
House of REPRESENTATIVES (Total)	**82**	**18**	**4**	**50**	**3**	**25**
Agriculture	1	0	0	1	0	0
Appropriations	6	1	0	2	2	2
Energy and Commerce	17	7	0	16	0	1
Foreign Affairs	2	0	0	0	0	2
Natural Resources	15	4	4	5	0	6
Oversight and Government Operations	6	0	0	4	0	2
Science, Space and Technology	35	6	0	22	1	12
SENATE (total)	**95**	**12**	**2**	**20**	**0**	**73**
Agriculture, Nutrition, and Forestry	3	0	0	0	0	3
Appropriations	28	0	0	3	0	25
Commerce, Science, and Transportation	1	0	0	0	0	1
Energy and Natural Resources	36	0	0	3	0	33
Environment and Public Works	26	12	2	14	0	10
Indian Affairs	1	0	0	0	0	1

than those hearings, the general strategy was not to hold hearings where climate change would take a central role, with only 12 with 6 more as a major concern in the House (out of 82 total) and 9, with 3 more a major concern in the Senate (out of 95).

The Senate Energy and Natural Resources Committee had 36 hearings mentioning climate change, but mostly because of incidental interjections by Democratic senators in discussions of other issues such as forest health, energy efficiency or Arctic economic opportunities In a few cases witnesses mentioned climate change or greenhouse gases in passing. Such comments were regularly ignored by the majority, with only three minor demurrals. The same strategy of ignoring incidental mention appears in the three hearings in the Agriculture, Nutrition, and Forestry Committee and one in the Commerce, Science, and Transportation Committee. These committees have no stases framing climate change as a central or major issue, or paying attention to the Obama Clean Energy Plan, Pope Francis, or the Paris Agreement. Even in the 28 hearings of the Appropriations Committee, agency reports or witnesses mentions of climate change are regularly ignored, except for three occasions questioning specific rules.

The Environment and Public Works Committee, with Senator Inhofe returning as the committee chair, however, directly contested action in 13 of the 26 hearings mentioning climate change, but they generally accepted the reality of climate change, and the contestation moved to other stases. Seven hearings made climate change central, with two directly on Paris, ahead of the meetings. The first focused on overregulation and government overreach, though the stasis did provide an opportunity for the proponents to make the affirmative case for climate change action. Even the chair in

selecting witnesses had to give respect to the strength of the evidentiary argument, with three of the five witnesses testifying on the pressing need for action. The final two witnesses, however, made legal arguments that the president did not have the power to act independently of Congress in entering into international agreements. In another hearing just before the Paris meeting, economic concerns were raised along with the procedural.

Four hearings on aspects of Obama's Climate Action Plan and other EPA policies, answered every argument for action with a counterargument. For example, one former military officer's testimony presenting the national and global security threat from climate change is matched with another retired officer testifying climate change is not a cause of war. Finally, one hearing centrally questioned whether greenhouse gasses should be regulated at the national or state level. Federalism in regulation also came up in hearings where climate change took a more minor role.

Confirming the general tacit acceptance of climate change in all the Senate hearings (but also the majority's concern for the economic interests of the energy industry) was the 98 to 1 approval of an amendment to an act approving a controversial pipeline that "climate change is real and not a hoax." Even Inhofe and Sessions (then senator from Alabama also with a long record of climate change denial) voted for this amendment. But a follow-up amendment attributing the change to human action received only a 50–49 majority, falling short of the 60 votes needed to avoid filibuster. Similarly, a resolution later that year introduced by Democrat Franken in support of the papal encyclical "Laudato Si" gained a 50–38 majority, with some bipartisan support, but again fell short of the filibuster mark.

The House took a more confrontational strategy, even though the science of climate change again was little contested. Three committees held hearings actively opposing Obama administration regulation. The Energy and Commerce Committee held 17 hearings that mentioned the issue, with two focusing centrally and five more with a major role. Six of these seven the stases questioned the economic consequences and ineffectiveness of the EPA's actions. The seventh, on the EPA budget, accepted climate change within the agency mandate, with no contestation; the Democratic minority, however, used this ordinary business to assert the need for action and the value of the EPA programs. Of the remaining 10 hearings where climate change took a lesser role, all but one evoked opposition to regulatory action.

In the 15 hearings in the Natural Resources Committee mentioning climate change, four had climate change as the central issue with all focused on regulation or the policies and science behind the regulations. While three of them had arguments over the scientific bases of actions, there was no contestation of climate change itself, but only that the phenomenon was more complex than the administration was presenting it. Several other hearings framed around related areas of regulation such as endangered species, oceans and water policy, transportation or energy, included evidence of overregulation, costs, and ineffectiveness of regulation. The six instances where climate change was not contested were all minor or incidental.

The most vigorous questioning of climate change action occurred in the Science, Space, and Technology Committee, with 35 hearings on the topic. The seven hearings where climate change took a central role focused on administration actions, with typical titles as "Impact of EPA'S Clean Power Plan on States" and "Paris Climate Promise: A Bad Deal for America." All of these, nonetheless, provided the opportunity for proponents of action to present the reality of climate change and the need for regulatory and international action. Eight other hearings questioned government science or regulatory action, with seven of them contesting ineffective regulation, costs, and alarmist manipulation of science. One avoided contestation because the stasis centered on whether investment should be made in carbon sequestration to protect coal's position in the future energy mix. As elsewhere, when climate change served economic interests, it was rarely contested. The twelve other instances where climate change was not contested were incidental or minor mentions.

In six hearings in the Appropriations Committee, however, climate change was an accepted part of the work of the agencies examined, despite passing remarks about overregulation and its costs, as in one hearing in the Agriculture Committee. In the Foreign Affairs Committee two incidental mentions were let pass with no comment. Even in the six hearings mentioning climate change in the Oversight Committee, none took on climate change regulation as a central or major issue, even when the EPA was the focus of attention; questions of overregulation or management of climate change issues came up in only 4 in passing.

So in the 114th Congress, with the fact of climate change no longer an issue, but also no legislation likely, the Senate was largely quiescent on climate change issues, avoiding discussion, even when events such as the Paris Conference called for comment--except in one committee with a strongly oppositional chair aiming to create an oppositional record. Multiple House committees, however, widely questioned regulation, cost, and procedures to create a negative record on actions, though not on the reality of climate change. The minority could only make the case for action from the sidelines and only when the stasis created space to make the arguments.

4.11 The 115th Congress (2017-Partial)

Figure 8. Relevant Committee Hearings in 115th Congress. Partial

	Relevant Hearings	Central or Major	science or scientific processes contested	not contested, but action opposed on other grounds	support for coal technologies	no oppositional mention or contestation
House of REPRESENTATIVES (Total)	**46**	**7**	**3**	**15**	**0**	**28**
Agriculture	3	0	0	0	0	3
Appropriations	5	2	0	2	0	3
Armed Services	1	0	0	0	0	1
Energy and Commerce	6	0	0	2	0	4
Foreign Affairs	2	0	0	0	0	2
Natural Resources	14	1	2	3	0	9
Oversight and Government Operations	1	0	0	1	0	0
Science (Science and Technology; Science, Space and Technology)	14	4	2	6	0	6
SENATE (total)	**30**	**3**	**0**	**0**	**0**	**30**
Appropriations	6	0	0	0	0	6
Commerce, Science, and Transportation	2	1	0	0	0	2
Environment and Public Works	22	2	0	0	0	22

With the 2016 election of President Trump and the continuing Republican control of both houses, climate change became even less of an issue in the 115th Congress, still in progress at the time of this writing. Trump's has stated an intention to withdraw from the Paris Agreement (Tabuchi & Fountain, 2017), has appointed climate skeptics and opponents of regulation to head administrative agencies relevant to climate change--such as Scott Pruitt at the Environmental Protection Agency (Davenport, 2017), and has loosened environmental regulation. So the majority in Congress which already expressed no desire to act, now had little motive to investigate the executive, and therefore little need to collect facts on administrative action or inaction. On the other hand, many Majority members of Congress seemed to accept the reality of climate change, but preferred not to act or even discuss it; therefore, they had little motive to either raise or contest scientific facts. As of this writing, the record of Congressional hearings is incomplete; nonetheless, the number of hearings discussing climate change seems to have further decreased from the previous Congress with climate change taking on a more marginal role discussed. From the published hearings available in mid-February 2018, transcripts are available for only 30 relevant Senate hearings in 2017 and 46 in the House, with mentions tending to arise only in questions from the minorities or in statements of witnesses, with only rare comment by majority members of Congress.

The Senate Environment and Public Works Committee presents a striking case of the current strategy. Inhofe, having served as chair for as long as his party regula-

tions allowed, was succeeded by Barrasso, who also had opposed action but had not opposed the science so vigorously. In the 22 hearings of this committee relevant to climate change (over 2/3 in the entire Senate during this period), climate change's reality was not contested a single time. In 16 of these, no opposition of any sort was expressed. In the nominating hearing for Scott Pruitt, minority Senators grilled him on his beliefs about Climate Change and he kept insisting he did believe in it and was at odds with President Trump on this matter. In several other nomination hearings for multiple positions, the candidates also avoided stating they opposed climate change or climate change action. Climate change was central in only two hearings, both devoted to emissions technology and the role of industry as the source for innovation and economic leadership. In both climate change was accepted as an uncontested fact. Similarly, in another hearing devoted to biofuels, climate change was an accepted assumption, and the debate was only whether corn based ethanol or other forms of biofuels were preferable.

The Senate Appropriations Committee when considering funding of agencies responsible for climate change research and action, as much as possible avoided use of directly mentioning or opposing climate change. Three of those hearings were just statements from non-governmental organizations with no Congressional questioning or response. In the three other relevant hearings, witnesses from governmental agencies in response to minority questions used evasive language, for example saying only they had an interest in climate, but not that they acted on climate change.

The Commerce Committee only had two hearings relevant to climate change, and one had only an incidental mention in a question, which evoked no opposition. The other was a field hearing in Florida looking into flooding. With only the local Senator present, no one questioned that the floods were indeed a result of climate change.

In the House the majority in most committees followed as well the strategy of not discussing climate change but not talking about it as much as possible except to consider free market and industrial solutions. In the Agriculture, Foreign Relations, and Armed Services Committees, the assumption of climate change was accepted as a relevant factor for considerations and was not contested. In the six hearings in the Energy and Commerce Committee, on one occasion the value of market-based solutions was offered and on another concerning hydropower a Senator pointed out that reservoirs also released greenhouse gases. In the five relevant hearings in the Appropriations Committee, in two hearings relief from regulation was argued, most fully in Secretary of Interior Zinke's testimony that the Paris Agreement was a bad deal, but there was no contestation of the existence of climate change or human causation. In the fourteen hearings of the Natural Resources Committee, which considered climate change as a factor, however, twice Representatives asserted that climate change was not so rapid or certain as assumed and on two other instances it was argued that specific current administration practices were effective, but the previous administration's identification of land for protection were ineffective.

None of the 32 aforementioned hearings in all these committees had climate change as the central focus or assumption and only three placed it as a major consideration.

Only in the Science, Space, and Technology Committee did the majority take a vocal, consistent position in opposition to climate change action, attacking the scientific consensus and actions of the previous administration. In its fourteen hearings related to climate change, two made the issue central and two others treated it as a major concern. Of those, "Making the EPA Great Again" and "Climate Science: Assumptions, Policy Assumptions, Policy Implications, and the Scientific Method" presented focused attacks on the findings and methods of climate science, and government use of the findings. Another hearing questioned the costs of climate action, presenting economic evidence. Interestingly, however, a hearing on creating resiliency in the electric grid considered climate change as the major threat, with no contestation or objection. Five of the remaining hearings where climate change took a lesser role offered arguments for free market solutions or against the efficacy or appropriacy of government action, and five others offered no objections or contestations to the mention of climate change.

Overall in the first year of the 115th Congress, all but one of the committees largely avoided discussing climate science or executive action; moreover, the questions of the minority were evaded without contestation. In fact, a number of the more extensive discussions of climate change occurred when administration witnesses were questioned by minority members and presented themselves as recognizing the problem and taking adequate, appropriate action. Only a few in the Congress or the Administration denied climate change or anthropogenesis, but action was still evaded by the dominant majority party largely by avoiding discussion or pointing to free market and technological solutions. Only the House Science, Space, and Technology Committee made climate change a contested issue.

4.12 Discussion

The road to understanding how Congress does or does not act on climate change has gone through understanding the genres by which knowledge is made part of the record, how these genres are produced, who controls the production, and the tools by which production is controlled. Understanding these processes and tools can, in turn, identify for us as citizens the pressure and intervention points to influence Congressional action on climate issues. While these processes and tools are endemic within Congress on many issues, the great exigency of anthropogenic climate change calls us to unpack and make more transparent previously unexamined mechanisms of collective institutional Congressional knowledge-making.

The genres of hearings transcripts record knowledge ostensibly relevant for Congressional action. These genres are shaped through the particular mechanisms,

opportunities, and constraints of the committee processes. The record of knowledge in these genres is produced through the activities of the respective committees, under the control of the committee chair from the majority party in each house. Events and changing political alignments and agendas create opportunities for committee chairs to schedule hearings. However, which opportunities are taken up, with what stases, depend on each chair's policy commitments, political calculations, and strategies that influence the kind of record they would like created in the resulting hearing transcript.

Though purposes may be partisan and contexts change, these tools of scheduling hearings, framing stases, and inviting witnesses are shared by committee chairs of either party when they are in control to create knowledge records to serve as predicates and justifications for action, oversight, and budgeting – and accountability for reelection. Congress members may vote and act on bases other than the official knowledge, and even in contradiction to it, but these tools present what Congress officially knows within the deliberations of each term. The tools of the minority members led by their ranking member are more limited, to call the majority constructed knowledge in doubt, or perhaps just to open up a wider range of considerations. The minority can be granted witnesses, but these witnesses and their testimony must be selected within relevance to the stases established by the majority chair. The statements of the ranking member and committee members also offer space to present facts and views, again with relevance to the stases, though occasional strategic digressions are possible. Finally, the minority members can ask questions of witnesses that press them on sensitive issues, comment on difficult facts, or pose alternative positions.

Both sides attempt to create a record that gets the facts relevant to their position on the record, in order to define or diffuse a problem to be acted on (or not). The main device for creating the public record is framing the questions of the hearings on which testimony is presented and follow-up questions constrained. This device is in the hands of the chair of the majority party, and the minority party is largely limited to call into doubt the record being created by the majority's framing. In short, the majority can talk about what it wants, and the minority can only object within the limits of that discussion. While giving the appearance of deliberations, hearings currently limit discussion in the interests of the majority and limit the record of knowledge.

Casting doubt on the recorded knowledge is typically a strategy of the minority, but the majority can also adopt such a strategy when addressing consensus knowledge among significant relevant publics, such as with anthropogenic climate change over this period. As IPCC reports have become more insistent and major climate events have been widely experienced, opponents of action must narrow evidentiary doubts to the degree of human causation, the pace of change, or potential bias and scandals in science. Opponents of action also switch stases to values that are claimed to outweigh climate change, such as the costs of regulation to the economy and jobs, or the protection of particular industries. Opponents also adopt procedural stases, such as the legality of administrative actions, the extension of other laws to address climate

change, or the appropriate jurisdictions for regulating harms. Procedures for equitable international cooperation on climate change are also regularly invoked. Even with evidentiary and value agreement on acting on climate change, the deliberative question remains of which procedure or mechanism for action should be chosen. This last stasis strongly invokes fundamental beliefs about the best ways to solve problems, whether government regulation, market mechanisms, or technological advances.

Since the 535 voting members of Congress have varying beliefs, experiences, interests to represent, and political identities within their constituencies, they may come to individual positions even when party discipline calls them to respect party positions. On each side a few individuals adopt the most vigorous public stances, often committee chairs or ranking minority members. Democrats seem to uniformly accept the need for action on climate change, even when attuned to protecting particular energy interests. Republicans, however, seem to have a spectrum of views behind the general party opposition to government regulation, but vigorous argument was largely limited to opponents of action, situated in a few committees. In other committees, Republican chairs and ranking members raise few objections to the scientific consensus, and at times announce their recognition of climate change and support action, though without extensive facts and argument. Rather they tend to remain silent or act quietly on issues before them accepting climate change assumptions. Even some Republican members of committees whose leadership express oppositional views and arrange for opposition witnesses, act in consonance with belief in climate change. Finally, when climate change is mentioned only peripherally, even vocal opponents of climate change action frequently simply say nothing.

This suggests that a bipartisan majority of both houses, no matter which party is currently in control, actually recognizes climate change and the need for action, though disagreeing on the kind of action to be taken. The Republican strategy of leaving the dominating voice to a few individuals who oppose action may even, by stalling government action, serve the interests of those who accept climate change, but believe in free market solutions and technological advances without government intervention.

Whatever may motivate the various positions, and however we may evaluate their substance, the structure of committees, hearings, and stases allow the construction of a record of knowledge that can either advance or obstruct vigorous legislative action to mitigate climate change and support for executive action through Congressional oversight, depending on the parties in control. Whether these processes are inevitable or even good, they are currently part of how Congress works or doesn't work, how it knows or avoids knowing. It all comes down to what you know depends on what you ask and whom you allow to contribute to what part of the answer. And what you ask depends on the rules of asking, the conditions that prompt the asking, and who leads the discussion. So apart what Congress members may know as individuals, Congress as an institution represents itself as knowing what its influential members and leadership want it to appear to know.

References

Aristotle (1991). *Aristotle 'On rhetoric': A theory of civic discourse*. (G.A. Kennedy, Trans.). New York, NY: Oxford University Press.

Arnold, R.D. (1990). *The logic of congressional action.* New Haven: Yale University Press.

Bazerman, C. (1991). How natural philosophers can cooperate: The rhetorical technology of coordinated research in Joseph Priestley's *History and present state of electricity*. In C. Bazerman & J. Paradis (Eds.), *Textual dynamics of the professions* (13–44). Madison: University of Wisconsin Press.

Bazerman, C. (1994). Systems of genre and the enactment of social intentions. In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (79–101). London: Taylor & Francis.

Bazerman, C. (2009). How does science come to speak in the courts? Citations, intertexts, expert witnesses, consequential facts and reasoning. *Law and Contemporary Problems*, *72*(1), 91–120.

Bazerman, C. (2013). *A theory of literate action.* Colorado Springs: WAC Clearinghouse.

Bazerman, C., & Self, B. (2017). Writing the world to build the world, iteratively: Inscribing data and projecting new materialities in an engineering design project. In R.K. Durst, G.E. Newell & J.D. Marshall (Eds.), *English language arts research and teaching: Revisiting and extending Arthur Applebee's contributions* (91–106). London: Routledge.

Burke, K. (1931). *Counter statement.* New York: Harcourt, Brace and Company.

Bush, G. (2007, January 23). President Bush's 2007 State of the Union Address. *Washington Post*. Retrieved from http://www.washingtonpost.com/wp-dyn/content/article/2007/01/23/AR2007012301075.html.

Cicero (1949). *De inventione; de optio genere oratorum; topica*. Cambridge MA: Harvard University Press.

Davenport, C. (2017, March 3). E.P.A. chief doubts consensus view of climate change. *The New York Times*. A1. Retrieved from https://www.nytimes.com/2017/03/09/us/politics/epa-scott-pruitt-global-warming.html.

Deering, C.J., & Smith, S. (1997). *Committees in Congress*. (3rd Ed.). Washington, D.C.: CQ Press.

Fahnestock, J., & Secor, M. (1988). The stases in scientific and literary argument. *Written Communication*, *5*(4), 427–443. doi:10.1177/0741088388005004002.

Fenno, R.F. (1973). *Congressmen in committees.* Boston: Little, Brown and Company.

Galloway, G.B. (1959). Development of the committee system in the House of Representatives. *American Historical Review*, *65*(1), 17–30. doi:10.2307/1846599

Galloway, G.B. (1961). *History of the House of Representatives*. New York: Thomas Y. Crowell.

Greenhouse, L. (2007, April 3). Justices say E.P.A. has power to act on harmful gases. *The New York Times*, A1. Retrieved from http://www.nytimes.com/2007/04/03/washington/03scotus.html

Grice, P. (1975). Logic and conversation. In P. Cole & J. Morgan (Eds.), *Syntax and semantics. 3: Speech acts* (41–58). New York, NY: Academic Press.

Holthaus, E. (2015, Jan 21). Senate Votes 98–1 That climate change is real but splits on that pesky cause. *Slate*. Retrieved from http://www.slate.com/blogs/future_tense/2015/01/21/senate_votes_that_climate_change_is_real_but_doesn_t_agree_on_cause.html

Krehbiel, K. (1991). *Information and legislative organization.* Ann Arbor: University of Michigan Press.

Mann, T., & Ornstein, N. (2006). *The broken branch: How Congress is failing America and how to get it back on track*. New York, NY: Oxford University Press.

Mantel, H.N. (1959). The Congressional Record: Fact or fiction of the legislative process. *The Western Political Quarterly*, *12*(4), 981–995. doi:10.2307/443792.

Mayhew, D. (2004). *Congress: The electoral connection* (2th ed.). New Haven: Yale University Press.

Merton, R.K. (1973). *The sociology of science: Theoretical and empirical investigation*. Chicago: University of Chicago Press.

Miller, C. (1984). Genre as social action. *Quarterly Journal of Speech, 70*, 151–67. doi:10.1080/00335638409383686.

Miller, C., & Selzer, J. (1985). Special topics of argument in engineering reports. In L. Odell & D. Goswami (Eds.), *Writing in non-academic settings* (309–341). New York, NY: Guilford.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organizational Science, 5*(1), 14–37. doi:10.1287/orsc.5.1.14.

Quintillian (1920). *Institution oratoria* (vol. 1). Cambridge MA: Harvard University Press.

Russell, D.R. (1997). Rethinking genre in school and society: An activity theory analysis. *Written Communication, 14*, 504–554. doi:10.1177/0741088397014004004.

Schmeckebier, L.S. (1925). *The Government Printing Office: its history, activities, and organization*. Baltimore: Johns Hopkins Press.

Schmeckebier, L.S., & Eastin, R. (1969). *Government publications and their use* (2nd rev. ed.). Washington, D.C.: Brookings Institution.

Sperber, D., & Wilson, D. (1986). *Relevance: Communication and cognition* (2nd ed.). Oxford: Blackwell.

Tabuchi, H., & Fountain, H. (2017, June 1) Bucking Trump, these cities, states and companies commit to Paris Accord. *The New York Times,* A12. Retrieved from https://www.nytimes.com/2017/06/01/climate/american-cities-climate-standards.html.

Wawro, G.J., & Schickler, E. (2006). *Filibuster: Obstruction and lawmaking in the U.S. Senate*. Princeton: Princeton University Press.

Weingast, B.R., & Marshall, W.J. (1988). The industrial organization of Congress; or, why legislatures, like firms, are not organized as markets. *Journal of Political Economy, 96*(1), 132–163.

Graham Smart and Matthew Falconer

5 Genre, Uptake, and the Recontextualization of Climate Change Science by 'Denialist' Cultural Communities

Abstract: This chapter presents a case study that asks why information about the prevailing scientific view of human-caused climate change – information that has circulated widely in the public realm for decades – has not had its intended influence on the beliefs and actions of a large part of the public. Following the "cultural turn in climate change studies" (Hulme, 2013, 298), we present several culture-related concepts from the social-science disciplines that we believe, when taken together, cast significant light on this climate change conundrum. Drawing on these culture-related concepts in combination with aspects of genre theory, we look at how three 'denialist' cultural communities (Kahan, 2012, 2017; Klein N., 2015) employ a digital genre set along with a repertoire of rhetorical strategies in recontextualizing – that is, in this case, intentionally misrepresenting, transmuting, and/or refuting – readily available information on the prevailing scientific view of climate change in order to inhibit the intended uptake of this information by members of these cultural communities. From our analysis we identify a digital genre set comprising website texts, blog posts, podcasts, e-newsletters, Facebook pages, and Twitter messages as well as repertoire of discursive strategies which are both widely used by denialist cultural communities in performing the 'rhetorical alchemy' of taking up meanings from texts communicating aspects of the prevailing scientific view of climate change and recontextualizing this discourse in an attempt to prevent it from challenging the communities' ideologies.

5.1 Introduction

The primary aim of this volume is to examine the role that genres play in organizing discourses in the ongoing controversy over global climate change – an instance of what Leah Ceccarelli (2011) calls a "manufactured scientific controversy" (195). At the same time, we note that the editors identify an urgent 'real-world' need to explain "the gap between the near-unanimous agreement in science about the basics of human made, or anthropogenic, climate change (ACC), and the widespread lack of acceptance of this agreement in the public sphere".[1] George Marshall (2014) asks a similar question: "Why, despite overwhelming scientific evidence, do we still act as if climate change doesn't exist? ... What is this psychological mechanism that allows us to know

1 From the introduction to the present volume.

something is true but act as if it is not?" (n.p.n). Extending this line of questioning to consequences, Stoknes (2015) points to the danger of this "climate paradox," as he calls it: "The more [scientific] facts that pile up about global warming, the greater the resistance to them grows, making it harder to enact measures to reduce greenhouse gas emissions and prepare communities for the inevitable change ahead" (n.p.n.).

Taking up the trail of this "climate paradox," our uptake in this chpater of the editors' prompt is four-fold: first, we discuss several concepts from genre theory that are relevant to our research; second, we discuss the notion of the social representation, recasting it as a 'rhetorical representation'; third, we introduce a number of culture-related concepts from social-science disciplines that we believe, when taken together, can, in concert with genre theory, contribute insights into the causes of the climate paradox; and fourth, we apply these various concepts in our empirical investigation. In this investigation we explore how different 'denialist' cultural communities (Kahan, 2012, 2017) employ the digital genres of website texts, blog posts, podcasts, Facebook pages, Twitter posts, and e-newsletters to take up and recontextualize – that is, in this case, to misrepresent, transmute, and/or refute – widely circulated information on the prevailing scientific understanding of climate change. The primary research question we address in the chapter is this: What discourse genres and rhetorical strategies do denialist cultural communities employ in taking up meanings from texts conveying aspects of the 'official science' on climate change – a term used here to refer to the prevailing view among climate scientists – and recontextualizing these meanings to create different and typically antithetical meanings reflecting the communities' own ideologies?[2]

In what follows, we begin with some background on the science of climate change as well as on the social actors – the individuals and groups – often referred to as 'climate change deniers'.[3] Next we discuss relevant research and theory and then present our case study with its findings.

5.2 Background: Climate Change Science and its Deniers

"[The science] of climate change is ultimately an amalgam of scientific facts based on modeling, projections, and empirical observations of current and historical records

2 The term 'ideology' has been given many different meanings in the scholarly literature (see Eagleton, 1991). For our purposes in this chapter we employ a definition taken from the work of Anabela Carvalho (2007): "I understand ideology as a system of values, norms and political preferences, linked to a program of action vis-à-vis a given social and political order. People relate to each other and to the world on the basis of value judgments, ideas about how things should be, and preferred forms of governance of the world" (226).

3 We use the term 'social actor' here to refer to any individual, organization, or institution communicating a perspective on the issue of climate change.

found in tree rings, coral reefs, ice cores, sea ice cover, and other forms of data" (Callison, 2014, 2). We would add several details to this description that will become relevant later in the chapter. The first is that scientists focusing on climate change in their research come primarily from the fields of atmospheric physics, atmospheric chemistry, glaciology, oceanography, and physical geography. Second, the foremost analytical tool employed by these scientists in their work is the 'global climate model', a highly complex computer-driven mathematical representation of the Earth's climate system and its primary interacting components – atmosphere, land surface, oceans, sea ice – that is used both to simulate current and historical climate systems in order to better understand their dynamics and to strengthen the basis for predictions of future trends in global and regional climates. And finally, the recognized authority on climate-science research is the UN's International Panel on Climate Change (IPCC). Historically, the IPCC has published a report every five or six years, beginning in 1990 and continuing through to 2014 with the release of the *IPCC Fifth Assessment Report*. Each of these reports conveys the current state of accepted scientific knowledge on climate change, based on a review of hundreds of peer-reviewed and published research papers on different facets of climate change produced by scientists around the world. Accordingly, hereafter in the chapter we will refer to the scientific facts and claims presented in the IPCC's most recent publication, the *IPCC Fifth Assessment Report*, as the 'official science' of global climate change.

Although we obviously lack an Archimedean vantage point from which to judge whether the 'official science' on climate change issuing from the IPCC is accurate, we nevertheless accept the validity of the following five claims originating in reports from the IPCC and supported by numerous national science academies and government environmental agencies: (1) global warming is occurring: the temperatures of the atmosphere and the oceans have been steadily increasing since the early 19th century; (2) this warming has been caused primarily by human activity – specifically, by fossil-fuel emissions adding CO2 to the greenhouse gases in the Earth's atmosphere; (3) CO2-driven global warming has already begun to cause climate change – that is, severe and repeated disruptions to the Earth's climates – and this is likely to intensify in the coming years; and (4) if global warming is not curbed, the future impacts of climate change could be extremely dangerous, causing widespread material, social, and economic damage; and (5) consequently, by inference, effective measures must be taken immediately to avoid, or at least mitigate, the impending catastrophe of climate change.

Climate change denial plays a central part in this chapter. So who are these social actors – individuals, organizations, institutions – labelled as 'climate change deniers'? While this is a highly contested term, nonetheless we need to define it for our purposes here. We use the term 'denier' (and 'denialist') to refer to a person or group that disputes one or more of the five IPCC-originating claims mentioned above. Research has shown the extent to which denialist groups have formed discursive networks around their shared antipathy towards the 'official science' on climate change (Farrell, 2016).

Research has also shown how such networking has been greatly facilitated by the use of social media (Bloomfield. E. & Tillery D., 2019).

5.3 Related Research and Theory

In this section we review research and theory from genre studies, social psychology, and other social sciences that we use in the present case study to help cast light on the 'climate paradox' mentioned earlier (Stoknes, 2015). This body of research and theory, when applied in analyzing the digital texts collected as data for our study, helps us explain why the 'official science' on climate change, though extensively communicated around the world, has not had the anticipated public response in belief or action. We begin by discussing several concepts from genre studies.

5.3.1 Digital Genres and Genre Sets

We see a 'genre' as a textual form of rhetorical action arising in response to the exigencies of a recurrent situation, all occurring within a particular social context (Miller 1984, 1994). Extending this notion, we employ the idea of a 'genre set' (Devitt 1991; Bazerman 1994) to refer to two or more genres performing different but related rhetorical actions within a common social context, such as, for example, a school classroom, a corporate head office, a community of social activists, or, in this instance, denialist cultural communities bent on disputing the official science on climate change.

The question of how climate science is represented in public discourse is of clear importance for our case study. In addressing this question, we take as a starting point recent research looking at the role played by digital genres in both accomplishing scientific work and communicating scientific knowledge to public audiences (Gross & Buehl, 2017; Kjellberg, 2014; Luzon, 2013, 2014; Smart, 2016). This developing area of inquiry has shown, for example, how the affordances of science-related blogs make possible new networks of social interaction among experts, para-experts, and interested members of the public, interactions that enable the construction, communication, and critique of new scientific knowledge; facilitate ideological relations among blog authors and readers, leading to the formation and strengthening of group identities; and, most germane for this chapter, provide those who would challenge the official science of climate change with discursive spaces in which to express their opposition to this science and to communicate with others of like mind.

The emergence of digital genres in the discourses of climate change has enabled denialist cultural communities to more easily employ digital genre sets as discursive vehicles for distributing their counter-messages on the credibility of mainstream climate science to a broad range of audiences. Such genre sets provide their originators with a rhetorical synergy in which the whole exceeds its parts.

5.3.2 Rhetorical Representations of Science

Another area of scholarship relevant to the representation of science in public discourse is the theory of 'social representations', developed by social psychologist Moscovici (1963) in his research on the French public's understanding of Freudian psychoanalysis.

Muscovici defined the social representation as "a social object [collectively produced] by the community for the purpose of behaving and communicating, [an object reflecting] the community's values, ideas and practices" (251). Other researchers have added to the conceptual reach of Moscovici's term. Potter (1996) sees the act of social representation as a discursive practice, viewing discourse as the site of social representations. Billig (1988) argues that social representations are best understood as discursive constructions deployed for rhetorical purposes. Applying this discursive perspective on social representations to the public understanding of science, Potter, Wetherell, Gill, and Edwards (1990) claim that the public's access to science necessarily comes through spoken or written (and we would add multimodal) discourse. Bauer and Gaskell (1999) expand on this idea, claiming that the public depends solely on social representations for access to the professional world of scientists, their specialized expert work, and scientific knowledge created through this work. For our purposes in this chapter, following the scholarship above, we hereafter refer to social representations as 'rhetorical representations of science'. Analyzing a corpus of approximately 1000 Web-published texts in a cluster of different digital genres, Smart (2011) identified ten recurring rhetorical representations of science, each used with persuasive intent either to promote or to undermine public acceptance of the official science on climate change. Of these ten recurrent genre-crossing rhetorical representations of science, five are particularly relevant to the present case study: (1) science as a unified, a-temporal, location-less social institution – as in "Science tells us that…"; (2) as an epistemic activity involving a wide range of disciplinary experts, working in different local sites, who employ various social, technical, conceptual, and textual practices in producing specialized forms of knowledge; (3) as an under-controlled activity that has repeatedly created major risks for the planet and for humankind; (4) as an institution personified in an individual scientist or in a group of experts (an association, society, or other organization); and (5) as a body of evidence-supported theories about the natural world that are human-constructed, provisional, and consensus-seeking. As we will see later in the chapter, the denialist social groups we have studied employ six of the ten representations of science in their challenges to the 'official science' of climate change as a denialist group recontextualizes – that is, in this case, misrepresents, transmutes, and/or refutes information in texts conveying aspects of this science in an effort to undercut its claims and the evidence supporting them.

5.3.3 Genre Uptake and Recontextualization

In introducing the term 'genre uptake' to discourse studies, Anne Freadman (1994) described it as a dialogical interaction between two genres, occurring when a text in one genre regularly elicits a responding text in another specific genre (as with an evening theatre performance and a next-day newspaper review, for example). Freadman (2002, 2012) later broadened this definition of uptake to include any rhetorical situation where the use of a genre prompts consequent discursive events, ways of thinking, and/or related human actions. Kimberly Emmons (2009) added further conceptual detail to Freadman's characterization of uptake in arguing that "to account for the power [...] of uptake, we must redefine uptake not as the relation between two (or more) genres, but as the disposition of subjects that results from that relation" (140). Taking the "disposition of subjects" to include the thinking, beliefs, and potential actions of an 'uptaker' of prior discourse, we will see later in the chapter how this relates to public responses to the official science on climate change, with its constituent facts and claims.

Per Linell (1998) provides a description of recontextualization as a discursive activity, a perspective that aptly serves our aims in the chapter. Linell begins with a concise definition of recontextualization as "the dynamic transfer-and-transformation of something from one discourse/text-in-context... to another" (144-145). He then expands on this definition: "Recontextualization involves the extrication of some part or aspect from a text or discourse, or from a genre of texts or discourses, and the fitting of this part or aspect into another context, i.e., another text or discourse (or discourse genre) and its use and environment" (145).

Researchers have empirically investigated instances of recontextualization in a range of professional contexts and genre systems, such as the fields of health care and science (Coupland & Coupland, 1998; Sarangi, 2001). Doris Ravotas and Carol Berkenkotter (1998) have examined the "inscribing practices [and] micro-level textual activity" (217) employed by a psychotherapist in recontextualizing the "session notes" she had scribbled during an initial interview with a client into part of a "written assessment document", a genre used to produce the professionally conventionalized account of the client's mental state required for the institutional purposes of justifying the psychotherapist's diagnosis of a particular mental disorder in the patient, prescribing a treatment plan, supporting medical insurance claims, and performing other bureaucratic purposes. Ravotas and Berkenkotter identify a number of rhetorical devices used by the physiotherapist observed in their study in converting the client's expression of her personal experiential meanings into the different forms of reported speech featured in the psychotherapist's "written assessment document."

Researchers have also investigated how scientific information is recontextualized through chains of different digital genres. In her study of science blogs, for example, Maria Jose Luzón (2013) describes how bloggers – intent on making specialized expert-produced science accessible to diverse public audiences, thereby advancing

the public understanding of science with its evidence-based facts and claims – take up and recontextualize specialized scientific discourse in order to make it comprehensible for these audiences. Luzón identifies four rhetorical devices used by science bloggers to achieve these ends: "adjusting information to the readers' knowledge and information needs; deploying linguistic features typical of personal, informal, and dialogic interaction to create intimacy and proximity; engaging in critical analysis of the recontextualized research and focusing on its relevance; and using explicit and personal expressions of evaluation" (428, original formatting altered by the authors). Later, in the findings of our case study, we build on the work of Luzón and of Ravotas and Berkenkotter in identifying a range of rhetorical strategies used by denialist groups in taking up and recontextualizing the official science of climate change.

Per Espen Stoknes (2015), for his part, situates the discursive activity of recontextualization more specifically in the context of the climate change debate, urging us to "look into how the facts from the climate consensus [of the official science] are being *shape-shifted* into uncertainty, irrelevance, divisive fiction, hysteria, hoax, and conspiracy in the thinking of too many" (xi, italics in original). Later in the chapter we take up Stoknes' prompt as we examine the collective uptake and recontextualization of the 'official science' of climate change within a number of denialist cultural communities.

5.3.4 Culture-related Concepts from Social-science Disciplines

To date, the larger part of social-science research attempting to account for public apathy and inaction in the face of the extensively communicated 'official science' of climate change has concentrated on individual cognition and behavior (Norgaard, 2011). Central to this research has been the 'information deficit model' (Wynne, 1995), which, when applied to our discussion here, assumes that individuals have not been responding appropriately to the growing threat of climate change because they lack sufficient scientific knowledge, with the corollary that if climate scientists were only better at conveying the facts of climate science to the public, the problem would be resolved and people would begin to think and behave differently. Another concept focused on the individual is 'ontological [in]security' (Giddens, 2011, cited in Norgaard, 2012) – the risk of losing one's known, ordered, predictable way of life and, with this, suffering a threat to personal identity – an existential condition which can lead to the 'psychology of denial' (Stoknes, 2015), a defense seen as particularly likely to occur in the face of invisible contested problems with largely future effects, such as climate change.

Sociologist Karin Norgaard (2012, 2018) contends that this focus on individual thinking and behavior in social-science investigations of the indifferent public response to climate change in many quarters has impeded this area of research from contributing to a better understanding of the roots of the public response, an under-

standing which could inform efforts to change people's thinking and motivate them to act in helping mitigate the risks of global climate change. In a similar vein, Environmental Studies scholar Andrew Hoffman (2015) argues that while certain useful insights regarding the public response to climate change have been achieved in social-science fields such as Sociology, Psychology, Anthropology, Political Science, and Environmental Studies, researchers in each of these disciplines have tended to work independently of their counterparts in other disciplines, thus limiting their potential impacts. Hoffman maintains that the full contributions of such discipline-specific work can only be achieved if they are brought together in conceptual frameworks providing a more comprehensive perspective on how denialist social groups have contrived to subvert the 'official science' of climate change. In what follows, we take up Hoffman's proposal and bring together several culture-related concepts from the social sciences in an effort to better understand why and how certain denialist cultural communities (Kahan, 2012, 2017) have collectively taken up and recontextualized the official science on climate change in order to render it less threatening to them, ideologically. As described below, research by Human Geography researcher Mike Hulme (2013) suggests a promising path of inquiry in this regard.

5.4 The Cultural Turn in Climate Change Studies

Hulme (2013) has pointed to a "cultural turn in climate change studies" (298), with researchers focusing on the joint construction of shared meanings within cultural communities. Hulme argues that "science alone cannot impose meaning on any physical phenomenon [and that] scientific evidence [...] is always contextualized and interpreted through cultural filters" (139). According to Hulme, the relatively weak public response to the official science on climate change can be explained, at least in part, by the fact that for many people the meanings accorded to scientific claims about climate change are interpreted collectively within the ethos of cultural communities to which these individuals belong. According to Hulme, common priorities, motivations, feelings, and beliefs within a community can inhibit its members from accepting the validity of the official science of climate change, ultimately resulting in apathy and inaction on their part.

Below we turn to the question of how denialist cultural communities take up and recontextualize – that is, in this case, transform and repurpose – the texts of digital genres containing facts and claims that constitute part of the official science on climate change, thereby creating new texts with meanings that are clearly antithetical to the original meanings. At the same time, we investigate the digital genre set and repertoire of rhetorical strategies used by denialist cultural communities in attempting to achieve their ends. First, though, we will consider three culture-related social-science concepts that can help us better understand this discursive phenomenon: 'social organization of denial', 'cultural cognition' and 'vernaculars of meaning'.

5.4.1 The Social Organization of Denial

In Norgaard's (2011) ethnographic study of climate change denial in a small Norwegian town, she employs the notion of the 'social organization of denial' (Zerubavel, 2006) as a broad rubric for bringing together a number of sociological concepts into a comprehensive explanation of how the highly informed and well-intentioned inhabitants of the town are able to "collectively hold information about [climate change] at arm's length by participating in cultural norms of attention, emotion, and conversation and by using a series of cultural narratives to deflect disturbing information and normalize a particular version of reality in which 'everything is fine'" (207). Norgaard found that even though individual members of the Norwegian community she was researching, when encountered in one-to-one conversations, might agree that the official science on climate change is largely convincing and then concede that climate change must be confronted as a global threat, the community as a collective nevertheless manages to avoid entirely the topic of climate change in its public discourse. Norgaard describes this behaviour as 'implicatory denial' (Cohen, 2001), a type of denial where scientific information is not disputed, and yet its ethical, political, and life-style implications are ignored as if non-existent.

Norgaard shows how the public silence maintained by the town's inhabitants regarding climate change has been achieved through a "social shaping of [their] awareness, memories, and thought patterns." Employing the metaphor of a 'cultural tool-kit' (Swidler, 1986), Norgaard explains how a cultural community can develop, over time, a distinctive repertoire of collectively available discursive resources – "symbols, stories, rituals, and worldviews" (Swidler, 1986, 273) – that provide the community with strategies for enabling avoidance and inaction in the face of apparently intractable problems such as climate change. In elaborating on the metaphor of the tool kit, Norgaard draws on the fields of Sociology and Social Psychology for the concepts of 'cognitive tradition', 'thought community', 'emotion management', 'selective perception', and 'cultural narrative' to help explain how "the public non-response to [climate change] is *produced* through cultural practices of everyday life" (207, italics in the original). In her account, Norgaard characterizes the avoidance of climate change as an acceptable topic within the public discourse of the town as an ongoing social practice allowing the community to maintain social stability and positive self-representation, while ignoring the sizeable contribution that the production and sale of oil makes to Norway's economy and to the standard of living of its citizens. Two other concepts developed by other contributors to the social-science literature complement Norgaard's model of socially organized denial: 'cultural cognition' and 'vernaculars of meaning'.

5.4.2 Cultural Cognition

The concept of 'cultural cognition' originates with Dan Kahan (as cited in Huynh, 2011, n.p.n.), a scholar of Law and Psychology, who describes it succinctly as "the tendency of people to fit their perceptions of risk and related facts to their group commitments". The concept is anchored in two assertions. The first is that individuals self-identifying as members of a cultural community tend to notice and pay greater attention to scientific information encountered in their daily lives when that information resonates with the community's shared values, rather than challenging those values, particularly in the case of polarizing social issues such as climate change. A related assertion is that when judging the credibility of scientific facts and claims, people identifying themselves as members of a cultural community tend to either resist or accept this scientific information according to the community's cultural orientation, and they can become increasingly entrenched over time in positions that reinforce their affinity and identification with the community and its ideology. Following from these two assertions is Kahan's general claim that people's ways of thinking are shaped by their engagement with cultural communities, with individuals performing ideologically-shaped cognitive acts of 'motivated reasoning', 'motivated numeracy', 'bounded rationality', and 'solution aversion', acts that allow them to claim a logic for their views while at the same time reinforcing their collective cultural identity. As Klein (2014), reporting on Kahan's research, observes, "our reasoning becomes rationalizing when we're dealing with questions where the answers could threaten our tribe – or at least our social standing in our tribe" (n.p.n.). As Naomi Kahan (2012) himself puts it,

> People with different values draw different inferences from the same evidence. Present them with a PhD scientist who is a member of the US National Academy of Sciences, for example, and they will disagree on whether he really is an 'expert', depending on whether his view matches the dominant view of their cultural group. ... People whose beliefs are at odds with those of the people with whom they share their basic cultural commitments risk being labelled as weird and obnoxious in the eyes of those on whom they depend for social and financial support (n.p.n).

What this means for the public debate over global climate change is that people often tend to adjust their interpretations of scientific claims and related evidence associated with climate change to accord with the shared values and outlook of a cultural community with which they closely identify. As Klein (2014) comments, "More information, in this context [of climate change] doesn't help [deniers] discover the best evidence. Instead, it sends them searching for evidence that seems to prove them right. And in the age of the Internet, such evidence is never very far away" (n.p.n.).

5.4.3 Vernaculars of Meaning

A second concept that we see as complementing Norgaard's theory of socially organized denial comes from the ethnographic work of Journalism researcher Candis Callison. Drawing on her multi-sited ethnography of five different North American social groups, all faced with the need to contend with climate change, Callison (2014) argues that for scientific facts about climate change to *matter* – that is, to take on meaning and salience – within a cultural community, the facts must be 'translated' into the 'vernacular' of the community. Callison defines a 'vernacular' as "the interpretive frameworks by which a term comes to gain meaning within a group and the work of translation that such a term must undergo in order to integrate it into a group's worldview, ideals, goals, perceptions, and motivations to act" (5). She describes the "communal life of facts" (n.p.n.) that can unfold within a cultural community when it is faced with new scientific information, a process in which scientific facts and claims are accorded meanings and significances adapted to the ethos and discourse of the community.

5.5 The Case Study

This section of the chapter describes a study guided by the following research question: What discourse genres and rhetorical strategies do denialist cultural communities employ in taking up meanings from texts conveying aspects of the 'official science' on climate change and recontextualizing these meanings to create antithetical meanings reflecting the communities' ideologies? We begin by describing our research method and then proceed to the findings of our study.

5.5.1 Method

As a first step towards answering the above research question, we examined the websites of a dozen organizations known to be closely associated with the official science of climate change, including the IPCC[4]; a number of national academies of science[5]; and several governmental environmental agencies[6]. We perused each website as well as any linked e-documents. In examining the websites, we looked for component texts and linked e-documents that containing facts and claims that we believe represent the current state-of-knowledge in mainstream climate change science. The

4 http://www.ipcc.ch
5 E.g., the US NAS: http://www.nasonline.org
6 E.g., the UK Met Office: https://www.metoffice.gov.uk

e-documents linked to the websites of these organizations included press releases, executive summaries from scientific reports, opinion pieces, and posters – all written for a non-specialist audience. We used these various sources to construct what we have been referring to as the 'official science' on climate change.

We also collected data from six denialist cultural communities, chosen to provide a cross-section of missions, that, as one part of their mandate, clearly reject and advocate against the official science on climate change. These denialist groups included the Heartland Institute; the Cornwall Alliance; the Tea Party; the Committee for a Constructive Tomorrow; the Friends of Science; and Climate Change Dispatch[7]. In examining the discourse of these groups, we focused on website texts, blog posts, podcasts, Facebook pages, Twitter messages, e-newsletters, and linked e-documents that could be seen as contributing to a narrative of climate change denial.

From these six denialist cultural communities, we selected three communities for closer study, each with a distinctive mission and ideology as well as its own particular 'vernacular of meaning' (Callison, 2014): The Heartland Institute, the Cornwall Alliance, and the Tea Party. We describe these groups below, in places quoting their own words.

- **Cornwall Alliance –** A religious group identifying itself as a "coalition of theologians, pastors, ministry leaders, scientists, economists, policy experts, and committed laymen [with an] evangelical voice promoting environmental stewardship and economic development built on Biblical principles" (Cornwall Alliance, 2018a). The group's mission: "We seek to magnify the glory of God in creation, the wisdom of His truth in environmental stewardship, the kindness of His mercy in lifting the needy out of poverty, and the wonders of His grace in the gospel of Jesus Christ" (Cornwall Alliance, 2018b). Its position on climate change: a statement from the organization's website declares that, "We believe Earth and its ecosystems – created by God's intelligent design and infinite power and sustained by His faithful providence – are robust, resilient, self-regulating, and self-correcting, admirably suited for human flourishing, and displaying His glory. Earth's climate system is no exception. Recent global warming is one of many natural cycles of warming and cooling in geologic history" (Cornwall Alliance, 2009). The Cornwall Alliance's vernacular could be described as religious and evangelical.
- **Heartland Institute –** A conservative think-tank describing itself as "one of the world's leading free-market think tanks [and] a national nonprofit research and education organization" (Heartland Institute, 2018a). Its mission is "to discover, develop, and promote free-market solutions to social and economic problems" (Heartland Institute, 2018a). Its position on climate change: according to an endorsement blurb on the Heartland's website, "Heartland has always been

7 www.heartland.org; www.cornwallalliance.org; www.teaparty.org; www.cfact.org; www.friendsofscience.org; www.climatechangedispatch.com.

public about its ultimate goals – to keep global warming alarmists from winning the public debate" (Bastasch, 2017). The Heartland Institute's vernacular could be described as quasi-scientific and technocratic.

– **Tea Party –** A conservative political advocacy group characterizing itself as a "grassroots movement calling awareness to any issue which challenges the security, sovereignty, or domestic tranquility of our beloved nation, the United States of America" (Tea Party, 2018). The group's mission is to contribute to "a nation where personal freedom is cherished and where all Americans are treated equally, assuring our ability to pursue the American Dream [which means] the freedom [to] work hard [and] to keep the fruits of your labor to use as you see fit" (Tea Party Patriots, 2018). Its position on climate change (as reflected in a news story linked to the Cornwall Alliance website): "The Obama administration is filing its plan to cut greenhouse gas emissions with the United Nations Tuesday. [According to Oklahoma Senator James Inhofe,] 'The Obama administration's pledge to the United Nations today will not see the light of day with the 114th Congress. This pledge [would allow] China to continue to expand its energy infrastructure and emissions through 2030 while American taxpayers and businesses foot the bill of [Obama's] extremist global warming agenda" (Tea Party Patriots, 2015). The vernacular of the Tea Party could be described as political and partisan, both in its domestic and international concerns.

Examining the digital genres of website texts, blog posts, podcasts, e-newsletters, Facebook pages, Twitter messages, and linked e-documents that we had collected from these three denialist cultural communities, we identified some 200 instances of uptake and recontextualization in the discourse, where one or more aspects of the official story on climate change were taken up by a cultural community, discursively transformed, and and rendered less threatening to the community's ideology.

5.6 Findings

In this section we pursue our primary research question: what discourse genres and rhetorical strategies do denialist cultural communities employ in taking up meanings from texts conveying aspects of the 'official science' on climate change and recontextualizing these meanings to create different and typically antithetical meanings reflecting the communities' ideologies?

In analyzing our data, we have come to view 'uptake' and 'recontextualization' – two closely-related concepts, obviously – as dual facets of a single semiotic process, a process involving a rhetorical act performed by a social actor as part of a discursive activity. As we see it, this semiotic process unfolds as follows: a social actor expresses certain meanings in a text-in-context in a given genre, a text that is subsequently selected, or 'taken up', by another social actor that recontextualizes – that is, trans-

forms and repurposes – meanings from the original text in a new text, which is either in the same genre or in a different genre, creating new meanings intended to evoke a particular way of thinking and/or acting on the part of its audience, a new or reinforced "disposition of subjects," to quote Emmons (2009). Seen this way, the uptake of intended meanings from the original text is a rhetorical act of intention and selection, while recontextualization is the discursive activity of transforming and repurposing the meanings of the original text in a new text conveying different meanings appropriate for the new context.

We also found that the discursive activity of recontextualization performed by denialist cultural communities entails two parts: first, a 'translation' of the original scientific and technocratic discourse of the IPCC, a national academy of science, or a government environmental agency into the vernacular of the cultural community; and second, at the same time, the meanings of one or more aspects of the official science on climate change contained in the original text are transformed and re-purposed, resulting in the subversion of the original meanings.

As we discuss below, the semiotic process of uptake and recontextualization of aspects of the official climate science performed by the three denialist cultural communities selected for close attention – the Heartland Institute, Cornwall Alliance, and Tea Party – is mediated by the digital genres of websites, podcasts, e-newsletters, Facebook pages, Twitter messages, and linked e-documents. We will see how each of the three denialist cultural communities employs digital genres, along with a repertoire of rhetorical strategies, in taking up and recontextualizing the discourse of official climate science to produce texts with different meanings reflecting the group's own particular ideology and vernacular.

5.6.1 Recontextualizing the Official Science of Climate Change

We found that the six denialist cultural communities whose discourse we examined are all extremely proficient in performing the semiotic process of uptake and recontextualization. They employ a variety of rhetorical strategies to transform and repurpose meanings related to the widely agreed upon official science on climate change in a manner that resonates with their own ideology and vernacular. We identified eleven such rhetorical strategies:

1. Refuting a specific scientific claim directly, while often voicing a counter-claim.
2. Attacking the primary tools of climate science – global climate models.
3. Characterizing a claim advanced by the official science as *only* a theory, not certain knowledge.
4. Making an attack on science as an institution slanted by a liberal ideology, one that has frequently led society in the wrong direction.
5. Condemning the IPCC for its motives, competence, and/or ideology.

6. Attacking individual scientists for their competence, motives, vulnerability to funding pressures, and/or ideological orientation.
7. Contesting the claim that 97% of world's climate scientists support the official science on climate change (Cook et al., 2013).
8. Conceding a partial claim related to climate science while ignoring a larger antithetical claim.
9. Attempting to undermine the official science by linking it negatively to politics, economics, and/or religion, while often emphasizing the perceived negative economic and lifestyle consequences of reducing the use of fossil fuels.
10. Bringing in alternative science from another discipline to undermine the credibility of atmospheric physics, atmospheric chemistry, glaciology, oceanography, and/or physical geography, e.g., astrophysics and its view that solar activity is the primary driver of global warming, not carbon dioxide.
11. Misrepresenting the nature and role of 'uncertainty' in science, and using this misrepresentation of uncertainty to undercut the credibility of climate science.

We also discovered that these eleven rhetorical strategies collectively employ six of the ten rhetorical representations of science mentioned earlier in the chapter (Smart, 2011): (1) science as a unified, a-temporal, location-less social institution – as in "Science tells us that…"; (2) as an epistemic activity involving a wide range of disciplinary experts, working in different local sites, who employ various social, technical, conceptual, and textual practices in producing specialized forms of knowledge; (3) as an under-controlled activity that has repeatedly created major risks for the planet and for humankind; (4) as an institution personified in an individual scientist; (5) as an institution embodied in a group of experts (an association, society, or other organization); and (6) as a body of evidence-supported theories about the natural world that are human-constructed, provisional, and consensus-seeking. Drawing on these widely recognized representations of science, denialist cultural communities are able to invest their discourse with rhetorical force.

Given space constraints, and employing a selection of convenience, we will focus the analysis that follows on the issue of how the first three rhetorical strategies in the list above have been used by the Cornwall Alliance, the Heartland Institute, and the Tea Party in taking up and recontextualizing – that is, misrepresenting, countering, subverting – aspects of the official climate science. For each of the three rhetorical strategies considered, we present excerpts from the digital genres of website texts, blogs, podcasts, e-newsletters, Facebook pages, Twitter messages, and linked e-documents used by the Cornwall Alliance, the Heartland Institute, and the Tea Party in order to illustrate how meanings from texts conveying some aspect of the official science on climate change have been recontextualized to create different meanings that accord with a community's ideology and vernacular.

5.6.2 Rhetorical Strategy 1: Refuting a Specific Scientific Claim Directly, While Often Voicing a Counter-Claim

The first rhetorical strategy to consider occurs when a denialist cultural community, using its own particular vernacular, refutes a scientific claim associated with the official science on climate change, while typically including a counter-claim, also expressed in its own vernacular. Below we see an example of this strategy employed in the discourse of each of the three cultural communities.

5.6.2.1 Cornwall Alliance

> Do Climate Alarmists Take God's Name in Vain?
> "You shall not take the name of the Lord your God in vain, for the Lord will not hold him guiltless who takes his name in vain." – The Third Commandment
> Here God forbids careless or irreverent use of His name. We should show reverence to God in what we say and do not only regarding His name but also regarding His titles, attributes, rules, works, and Word. ...How does this Commandment relate to environmental stewardship? ...When [someone] insults a building, he insults its designer or builder... Environmentalists frequently speak of the earth and its ecosystems as extremely fragile, prone to catastrophic collapse in response to human actions. ...The fear, for instance, that our increasing carbon dioxide's concentration in the atmosphere... will cause catastrophic global warming suggests that earth's climate system is poorly designed, like a building that would collapse if you merely leaned against one of its walls. That view seems to insult the climate system's Designer *(Cornwall Alliance, 2017a)*.

5.6.2.2 Heartland Institute

> Climate change has been occurring for hundreds of millions of years. There is no hard evidence carbon-dioxide emissions are causing significant climate change, or are a threat to our nation. And what little warming we are experiencing is within the range of natural variability. There is no clear evidence to date of any change in climate outside the bounds of natural variability over the past millennium *(Heartland Institute, 2017a)*.

5.6.2.3 Tea Party

> President Obama and the American Progressives have been willing conspirators in this attack on American sovereignty. They have negotiated treaties and signed accords which are designed to impoverish the US and transfer that wealth to the UN... They have brainwashed generations to live in fear of man-made global warming though none has taken place since before most of them were born... Now we are living in the post-wave election world of 2016. President-elect Trump has promised to reverse the course. He has labeled man-made global warming for the scam it is and promised to free America from the mass of threads with which the Lilliputians have ensnared us *(Owens, 2016)*.

5.6.3 Rhetorical Strategy 2: Attacking the Primary Research Tools of Climate Science – Global Climate Models

The second rhetorical strategy employed by denialist cultural communities is to attack the primary tool that climate scientists use in their research: the computer-run global climate model. Again, we will present an example taken from the discourse of each of the three cultural communities.

5.6.3.1 Cornwall Alliance

> As people of Biblical faith, then, we have a commitment not only to truth, but also to the practice of science as one path to truth. Today, when scientists run complex climate models on powerful computers to simulate immeasurably more complex natural systems like the earth's climate, we must not forget our commitment to truth or that our models can become "seductive simulations." [Climate] models are not reality but must be tested by it. If their output disagrees with observation, the models, not nature, must be corrected. The scientific method demands that theories be tested by empirical observation. By that test, models are wrong. They therefore provide no rational basis to forecast dangerous human-induced global warming, and therefore no rational basis for efforts to reduce warming by restricting the use of fossil fuels or any other means *(Cornwall Alliance, 2015)*.

5.6.3.2 Heartland Institute

> First, the complex climate models referenced in the literature... grossly overstate the amount of warming we have actually experienced as greenhouse gas emissions have risen. Actual measurements indicate Earth has warmed about one degree Fahrenheit over the past 150 years, but according to the models Earth should have experienced at least twice that much warming based on carbon dioxide emissions and feedbacks. The results of the global climate models (GCMs) relied on by IPCC are only as reliable as the data and theories "fed" into them. Most climate scientists agree those data are seriously deficient and IPCC's estimate for climate sensitivity to CO2 is too high. We estimate a doubling of CO2 from pre-industrial levels (from 280 to 560 ppm) would likely produce a temperature forcing of 3.7 Wm-2 in the lower atmosphere, for about ~1°C of prima facie warming *(Heartland Institute, 2017b)*.

5.6.3.3 Tea Party

> The [climate scientists] who conjured up the computer models featured in the Intergovernmental Panel on Climate Change (IPCC) reports also did quite well for themselves, along with all the others who climbed on the gravy train of global warming grants... In 2009, the release of a huge cache of emails between the IPCC global warming perpetrators instantly became known as "Climategate" as the world learned that it was all a scam, a hoax, a fraud based on deliberately falsified computer models, and force fed to the public *(Caruba, 2012)*.

5.6.4 Rhetorical Strategy 3: Characterizing a Claim Advanced by the Official Science as Only a Theory, not Proven Knowledge

The third rhetorical strategy to be illustrated is to dismiss major claims inherent in the official science on climate change as being *only* a theory, and therefore not to be accepted as reality. (The bold print in the excerpts below has been added by the authors.)

5.6.4.1 Cornwall Alliance

> The Bible doesn't reveal, explicitly or implicitly, whether dangerous manmade global warming is real [and] no historic Christian creed or confession does so, either... What we're seeing here... is the substitution of environmentalist religion for historic, Biblical Christianity. For these people, commitment to a particular **scientific theory about how much warming comes from CO2 added to the atmosphere**, and what the results will be for ecosystems and human economies, is more central to the Christian faith than belief in Christ's resurrection – apart from which, the Apostle Paul says, our faith is in vain: Thanks be to God, there are Christian thinkers who not only affirm the resurrection of Christ but also think a whole lot more soundly about climate change *(Cornwall Alliance, 2017b)*.

5.6.4.2 Heartland Institute

> The papers collected in this work analyze scientific data concerning patterns of past climate changes, influences in changes in ocean temperatures, the effect of solar variation on global climate, and the effect of carbon dioxide on global climate. The book clearly presents an overwhelming amount of evidence that refutes arguments made by those promoting the **theory of catastrophic anthropogenic global warming** *(Heartland Institute, 2017c)*.

5.6.4.3 Tea Party

> **The current bad science is all based on a theory** that the increase in the amount of carbon dioxide in the atmosphere from the exhaust of the burning of fossil fuels leads to a dramatic increase in "the greenhouse effect" causing temperatures to skyrocket uncontrollably. This theory has failed to verify and is obviously dead wrong. But the politically funded and agenda driven scientists who have built their careers on this theory and live well on the 2.6 billion dollars of year of Federal grants for global warming/climate change research cling to this theory and bend the data spread to support the glorified claims in their reports and papers *(Gainesville Tea Party, 2018)*.

At this point in our study we need to ask how successful the Heartland Institute, the Cornwall Alliance, and the Tea Party have been in their efforts to recontextualize the

official science of climate change in order to produce meanings that accord with their own vernaculars and ideologies. To answer this question properly, however, we would need to know how these discourses have been taken up by their audiences, presumably readers who self-identify as community members, research that is beyond the scope of this chapter. Nevertheless, given that each of the three denialist cultural communities we have studied closely has been in existence for a number of years and maintains an active presence on the Web, one can reasonably assume that each community has succeeded in accomplishing, through the collective practices of its members, the 'social organization of denial', along with its constituent cultural cognition, avoidance practices, and distinctive vernacular.[8] Doing so has allowed each of the three cultural communities to, in Norgaard's words, "collectively hold information about [climate change] at arm's length by participating in cultural norms of attention, emotion, and conversation and by using a series of cultural narratives to deflect disturbing information and normalize a particular version of reality in which 'everything is fine'" (207).

5.7 Conclusion

Our study has examined a range of genres and rhetorical strategies employed by three denialist cultural communities in taking up and recontextualizing the discourse of the official science on climate change in an effort to challenge and subvert this science. We have framed the use of these strategies within cultural communities as part of a larger practice of socially organized denial vis-à-vis the realities of climate change, with cultural cognition, avoidance practices, and discursive vernaculars of meaning viewed as significant factors in this collective denial. At the same time, we have seen how a digital genre set comprising website texts, blogs, podcasts, e-newsletters, Facebook pages, and Twitter messages serves as a, discursive vehicle for a semiotic process of uptake and recontextualization intended to undermine the official science on climate change.

A final word: In her contribution to this volume, Amy Devitt advocates employing genre in the debate over climate change with a critical sense of genre's capacity for constructive social action as well as an awareness of the ideologies inherent in genre. Of the four genre-related principles that Devitt sees as having the potential to guide us in the skillful use of genres for achieving "transformative social action" vis-à-vis the realities of climate change, we see the principle of "generic resistance" – "resist[ing] genres that reinforce undesired perspectives" – as most relevant for prompting further

8 The founding dates for the Heartland Institute, Cornwall Alliance, and Tea Party are 1984, 2005, and 2010, respectively.

investigation of the discursive tactics of denialist cultural communities, with the aim of evoking an effective public response. Let generic resistance begin.

References

Bastasch, M. (2017, Nov. 21). The real story behind the Heartland Institute's role in the Trump admin. *The Daily Caller*. Retrieved from http://dailycaller.com/2017/11/21/the-real-story-behind-the-heartland-institutes-role-in-the-trump-admin.

Bauer, M.W., & Gaskell, G. (1999). Towards a paradigm for research on social representations. *Journal of the Theory of Social Behaviour, 29*(2), 163–186. doi:10.1111/1468-5914.00096.

Billig, M. (1988). *Arguing and thinking: A rhetorical approach to social psychology*. Cambridge: Cambridge University Press.

Bloomfield, E. & Tillery, D. (2019). The circulation of climate change denial online: Rhetorical and networking strategies on Facebook. Environmental Communication, 13(1), 23–34.

Callison, C. (2014). *How climate change comes to matter: The communal life of facts*. Durham, NC: Duke University Press.

Caruba, A. (2012, April 5). The utter desperation of global warmists. Retrieved from http://factsnot-fantasy.blogspot.com/2012/04/utter-desperation-of-global-warmists.html.

Carvalho, A. (2007). Ideological cultures and media discourses on scientific knowledge: Re-reading news on climate change. *Public Understanding of Science*, *16*, 223–243. doi:10.1177/0963662506066775.

Ceccarelli, L. (2011). Manufactured scientific controversy: Science, rhetoric, and public debate. *Rhetoric and Public Affairs, 14*(2), 195–228. doi:10.1353/rap.2010.0222.

Cohen, S. (2001). *States of denial: Knowing about atrocities and suffering*. Cambridge, UK: Polity Press.

Cook, J., Nuccitelli, D., Green, S.A., Richardson, M., Winkler, B., Painting, R Way, R., Jacobs, P., and Skuce, A. (2013). Quantifying the consensus on anthropogenic global warming in the scientific literature. *Environmental Research Letters, 8*, 24024–7. doi:10.1088/1748-9326/8/2/024024.

Cornwall Alliance (2009, May 01). An evangelical declaration on global warming. Retrieved from https://cornwallalliance.org/2009/05/evangelical-declaration-on-global-warming.

Cornwall Alliance (2015, April 27). An open letter to Pope Francis on climate change. Retrieved from https://cornwallalliance.org/anopenlettertopopefrancisonclimatechange.

Cornwall Alliance (2015, July 06). Sin, deception, and the corruption of science: A look at the so-called climate crisis. Retrieved from https://cornwallalliance.org/2016/07/sin-deception-and-the-corruption-of-science-a-look-at-the-so-called-climate-crisis.

Cornwall Alliance (2017a, Dec. 21). Do climate alarmists take God's name in vain? Retrieved from https://cornwallalliance.org/2017/12/do-climate-alarmists-take-gods-name-in-vain

Cornwall Alliance (2017b, June 06). Is Paris Agreement more fundamental to Christian faith than Christ's resurrection? Retrieved from https://cornwallalliance.org/2017/06/is-paris-agreement-more-fundamental-to-christian-faith-that-christs-resurrection.

Cornwall Alliance (2018a). About [the CA]. Retrieved from https://cornwallalliance.org/about.

Cornwall Alliance (2018b). What drives us. Retrieved from https://cornwallalliance.org/about/what-drives-us.

Coupland, N., & Coupland, J. (1998). Reshaping lives: Constitutive identity work in geriatric medical consultations. *Text, 18*(2), 159–190. doi:10.1515/text.1.1998.18.2.159.

Devitt, A. Genre *for* social action: Transforming worlds through genre awareness and action. This volume.

Eagleton, T. (1991). *Ideology: An introduction*. New York: Verso.

Emmons, K. (2009). Uptake and the biomedical subject. In C. Bazerman, A. Bonini & D. Figueiredo (Eds.), *Genre in a changing world.* (134–157). Fort Collins, CO: The WAC Clearinghouse.

Farrell, J. (2016). Network structure and influence of the climate change counter-movement. *Nature Climate Change*, 6(4), 370–374.

Freadman, A. (1994). Anyone for tennis? In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (43–66). London, UK: Taylor & Francis.

Freadman, A. (2002). Uptake. In R. Coe, L. Lindgard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (39–53). Cresskill: Hampton Press.

Freadman, A. (2012). The traps and trappings of genre theory. *Applied Linguistics, 33*(5), 544–563. doi:10.1093/applin/ams050.

Gainsville Tea Party (2018, Jan. 22). *The deep state: What is really going on?* Retrieved from http://www.gainesvilleteaparty.net/?cat=27.

Giddens, A. (1999). *The consequences of modernity*. Cambridge, UK: Polity Press.

Gross, A.G., & Buehl, J. (Eds.) (2017). *Science and the Internet: Communicating knowledge in a digital age*. London, UK: Routledge.

Heartland Institute (2017a, Dec. 18). Heartland Institute experts react to climate change being removed from Trump's national security strategy. Retrieved from https://www.heartland.org/news-opinion/news/heartland-institute-experts-react-to-climate-change-being-removed-from-trumps-national-security-strategy.

Heartland Institute (2017b, Nov. 03). Costs of decarbonisation greater than costs of climate change. Retrieved from https://www.heartland.org/news-opinion/news/costs-of-decarbonization-greater-than-costs-of-climate-change.

Heartland Institute (2017c, Mar 22). New book destroys AGW myth, gets climate science right. Retrieved from https://www.heartland.org/news-opinion/news/new-book-destroys-agw-myth-gets-the-climate-science-right.

Heartland Institute (2018a). About us. Retrieved from https://www.heartland.org/about-us/index.html.

Heartland Institute (2018b, Apr 06). Science catastrophe scares and IPCC ascent explained. Retrieved from https://www.heartland.org/news-opinion/news/science-catastrophe-scares-and-ipcc-ascent-explained.

Hoffman, A. (2015). *How culture shapes the climate change debate*. Stanford, CA: Stanford University Press.

Hulme, M. (2013). *Exploring climate change through science and in society: An anthology of Mike Hulme's essays, interviews and speeches*. Abingdon, UK: Routledge.

Huynh, N. (2011, May 13). Cultural cognition and scientific consensus. *Yale Scientific Magazine.* Retrieved from http://www.yalescientific.org/2011/05/cultural-cognition-and-scientific-consensus.

Kahan, D. (2011). Perception of climate change risk depends on world-view. *Environmental Research Web*. Retrieved from http://environmentalresearchweb.org/cws/article/news/44825.

Kahan, D. (2012). Why we are poles apart on climate change. *Nature: International Weekly Journal of Science, 488*, n.p.n. Retrieved from https://www.nature.com/news/why-we-are-poles-apart-on-climate-change-1.11166.

Kahan, D. (2017). Misconceptions, misinformation, and the logic of identity-protective cognition. Cultural Cognition Project Working. *Paper Series* No. 164. Yale University. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=297306.

Kjellberg, S. (2014). Researchers' blogging practices in two epistemic cultures: The scholarly blog as a situated genre. *Human IT, 12*, 36–77.

Klein, E. (2014, Apr. 06). How politics makes us stupid. *Vox.* Retrieved from https://www.vox.com/2014/4/6/5556462/brain-dead-how-politics-makes-us-stupid.

Klein, N. (2015). This changes everything: Capitalism versus the climate. Toronto: Vintage Canada.
Luzon, M.J. (2013). Public communication of science in blogs: Recontextualizing scientific discourse for a diversified audience. *Written Communication, 30*(4), 428–457. doi:10.1177/0741088313493610.
Luzon, M.J. (2014). Engaging in scientific controversies in science blogs: The expression of allegiance and ideological commitment. In H. Ling Lim & F. Sudweeks (Eds.), *Innovative methods and technologies for electronic discourse analysis* (235–259). Hershey, PA: Information Science Reference (an imprint of IGI Global). doi:10.4018/978-1-4666-4426-7.ch011.
Marshall, G. (2014). *Don't even think about it: Why our brains are wired to ignore climate change*. New York, NY: Bloomsbury.
Moscovici, S. (1963). Attitudes and opinions. *Annual Review of Psychology, 14*, 231–260. doi:10.1146/anurev.ps.14.020163.001311.
Norgaard, K.M. (2011). Climate denial: Emotion, psychology, culture, and political economy. In J.S. Dryzek, R.B. Norgaard & D. Schlosberg (Eds.), *The Oxford handbook of climate change and society* (399–413). Oxford, UK: Oxford University Press. doi:10.1093/oxfordhb/9780199566600.003.0027.
Norgaard, K.M. (2012). *Living in denial: Climate change, emotions, and everyday life*. Cambridge, MA: The MIT Press.
Norgaard, K.M. (2018). The sociological imagination in a time of climate change. *Global and Planetary Change*, 163, 171–176.
Owens, R. (2016, Dec. 10). Inconvenient truths about the man-made global warming scam. *Tea Party Tribune*. Retrieved from http://www.teapartytribune.com/2016/12/10/inconvenient-truths-man-made-global-warming-scam/.
Potter, J. (1996). *Representing reality: Discourse, rhetoric and social construction*. London, UK: SAGE.
Potter, J., Wetherell, M., Gill, R. & Edwards, D. (1990). Discourse: Noun, verb or social practice? *Philosophical Psychology, 3*(2), 205–217. doi:10.1080/09515089008572999.
Ravotas, D., & Berkenkotter, C. (1998). Voices in the text: The uses of reported speech in a psychotherapist's notes and initial assessments. *Text, 18*(2), 211–240. doi:10.1515/text.1.1998.18.2.211.
Sarangi, S. (2001). On demarcating the space between 'lay expertise' and 'expert laity'. *Text, 21*(1/2), 3–11. doi:10.1515/text.1.21.1-2.3.
Smart, G. (2011). Argumentation across web-based organizational discourses: The case of climate change. In S. Sarangi & C. Candlin (Eds.), *Handbook of communication in organisations and professions* (363–386). Berlin, DE: Mouton De Gruyter.
Smart, G. (2012). The discursive production and impairment of public trust through rhetorical representations of science: The case of global climate change. In C. Candlin & J. Crichton (Eds.), *Discourses of trust: The discursive construction of 'trust' within applied linguistic research* (252–268). Basingstoke, UK: Palgrave Macmillan.
Smart, G. (2016). Discourse coalitions, science blogs and the public debate on global climate change. In A. Bawarshi & M.J. Reiff (Eds.), *Genre and the performance of publics* (157–177). Logan: Utah State University Press. doi:10.7330/9781607324430.c008.
Stoknes, P.E. (2015). *What we think about when we try not to think about global warming: Toward a new psychology of climate action*. White River Junction, VT: Chelsea Green Publishing.
Swidler, A. (1986). Culture in action: Symbols and strategies. *American Sociological Review, 51*(2), 273–286. doi:10.2307/2095521.
Tea Party (2018). About us. Retrieved from https://www.teaparty.org/about-us.
Tea Part Patriots (2015, April 01). News briefing for Wednesday, April 1, 2015. Retrieved from https://www.teapartypatriots.org/news-briefing/news-briefing-for-wednesday-april-1-2015.

Tea Party Patriots (2018). Our core principles. Retrieved from https://www.teapartypatriots.org/ourvision.

Wynne, B. (1995). Public understanding of science. In S. Jasanoff, G.E. Markle, J.C. Peterson & T. Pinch (Eds.), *Handbook of science and technology studies* (361–388). Cambridge, MA: The MIT Press.

Zerubavel, E. (2006). *The elephant in the room: Silence and denial in everyday life*. Oxford, UK: Oxford University Press.

Sune Auken and Mette Møller

6 "THINK BIG and then do absolutely NÜSCHTE". News Satire and the Climate Debate

Abstract: The chapter discusses how ACC is represented in news satire, and how the genre may affect climate change perception. News satire is first a humor genre, primarily intended to make people laugh, and any impact news satire may have on the ACC debate is dependent on this laughter. Based on an examination of a wide selection of news satire sites and video channels, the chapter identifies and discusses the most common types and targets of news satire on ACC. In general, climate denialism and public inaction relative to climate change are the primary targets. News stories satirically representing public figures, particularly politicians, as passive and in denial of climate change are also relatively common. Towards the end, the chapter moves to discuss the impact of news satire on climate change perception. News satire often presents a grim outlook on the future of our planet leaving little space for hope. At the same time, however, news satire allows for a perhaps more bearable emotional response to such hopelessness by inviting recipients to laugh at the ACC denier – a ridiculous figure regularly included in the news stories. News satire moreover transcends false balance issues in mainstream media and consistently confirms the reality and severity of ACC, thereby highlighting the importance of climate action.

6.1 Introduction

The purpose of the present chapter is to present and analyze the treatment of anthropogenic climate change (ACC) in news satire. As an arena rife with failings, selfishness, self-contradiction, human shortcomings, and ridiculousness, the climate debate is an open invitation to satire, and news satire makes the most of it. The chapter provides a brief general introduction to news satire as a genre and describes its coverage of ACC. On this background, the chapter analyzes how news satire on ACC works as an unusual, but potentially effective, genre for climate communication.

The relationship between humor and genre is underexplored in existing genre research with its consistent focus on the function and workings of genre (Devitt, 2009; Auken, 2015; Miller, Devitt & Gallagher, 2018). Even though they are a crucial factor in many forms of human communication, the functional aspect of the humor genres are harder to come by, as they are challenging, albeit not impossible, to describe as social actions in the Rhetorical Genre Studies tradition (Miller, 1984; and numerous other studies). However, the effects of humor have been examined in other parts of research, which are only partially represented here, so there are rich opportunities for

further studies. This chapter and the one that follows are in this sense only a beginning.

6.2 Convictions Blowing in the Wind

On September 8th 2017, after hurricane Irma had devastated several Caribbean islands, and two days before it took land in southwest Florida, the satiric news service *The Onion* published a story with the headline "Climate Change Denier Battens Down Worldview To Weather Hurricane Irma".[1] In it, a person described as "local climate change denier Michael Dunn" spends the day before the storm trying to bolster his view "that climate change is a government conspiracy" by stockpiling "pseudo-scientific reports from the internet". However, he still fears the effect of the storm: "All I can do now is ride it out and hope that I've done enough to protect my ideology from being completely leveled by this storm. I hate to say it, but I'm preparing for the worst."

The story conflates two different, but related fields. The preparations made by locals in the storm-stricken area to protect their possessions from the oncoming hurricane, and the problems posed to the denial of ACC by the increased occurrence of extreme weather events like hurricane Irma. By picturing climate denial as something that *can* be blown away by hurricane Irma, in the same way as physical objects can, it enters into a crucial question posed by the increased proliferation of extreme weather events. Namely, whether and to what degree they can be said to result from ACC (Anderson & Huntington 2017, Otto, Skeie, Fuglestvedt, Berntsen, & Allen 2017, Moser 2016), and – by consequence – whether such occurrences provide evidence for the reality of ACC.

The story does not directly pick up this question, but it takes a stand in the discussion through the conflation of the two spheres, by seeing the hurricane as evidence potentially strong enough to destroy the convictions of a hardened climate change denier like Michael Dunn. Paradoxically, the story's protagonist himself seems quite aware of the unsustainability of his convictions. He fears the hurricane as "the big one that completely destroys my position", hopes that he has done enough preparation against the storm to protect his ideology, but he is even preparing for "the worst", i.e. to have his ideology smashed by the oncoming hurricane. He is, thus, not a realistically rendered character, but a parody of a climate denier, displaying his own delusions with a surprising level of candor and clarity.

1 Seen April 13th, 2018.

6.3 News Satire

The last two decades have seen a steep rise in a genre of political humor[2] that both mimics, uses, and pokes fun at the genres in which the media represents current events.[3] Broadly speaking, the genre takes two forms. News satire is not a new phenomenon; thus in the 1840s *Punch* in the United Kingdom and *Corsaren* in Denmark both published various forms of news satire. However, in their contemporary shape, the oldest is the fictionalized news reporting first made prominent by *The Onion* from 1988 and onward which in its basic form mimics newspaper reporting, but reports events that have not taken place, or have at least taken place in widely different ways from what is reported. *The Onion* continues to represent the gold standard for the genre, but excellent satire news services have emerged in its wake – in many countries and in many languages; some will be quoted here, but many more exist. The second, and probably most well-known, are the satiric newscasts made prominent by *The Daily Show with Jon Stewart* and *The Colbert Report* and continued by Stewart's immediate heir Trevor Noah on *The Daily Show with Trevor Noah* and by former *The Daily Show*-alumni in *This Week Tonight with John Oliver* and *Full Frontal with Samantha Bee*. The heritage from Jon Stewart can also be found in the German version, *heute-show*. The TV shows mainly report actual news stories and the satire is the way the show's news anchor or correspondents comment upon it. In contrast, the vast majority of the stories in *The Onion* and its competitors are invented, and their commentary on current events is much more indirect. Even when they shift media and enter TV/video news, like, for instance, *The Onion*, *The Beaverton* and *Der Postillion* have done, they still mostly report "news" that has not taken place.[4] By consequence, most research into news satire has concentrated on one or the other, with vastly more research into the TV shows (Berkowitz & Schwartz, 2015).[5]

It could feasibly be argued that we are dealing with two distinct genres. Thus, Tandoc jr., Lim, & Ling (2017), for example, distinguish between "*News Satire*" in the vein of Jon Stewart, and "*News Parody*" for the tradition from *The Onion*. However, the

2 Political humor is a pervasive and many-sided phenomenon, and the research into it is extensive indeed. For an introduction and further references, see Møller (2018, 37–39) with numerous further references.

3 News satire is not treated in Reiff & Bawarshi (2016); nor in Miller & Kelly (2017). However, the genre, emerging in force in new media environments and acting in the public sphere with little in the way of an institutional context, would have fitted nicely into both.

4 Despite the fictive character of the news reported, the formal presentation of said news mimics the news presentation of mainstream media much more closely, thus establishing a strong clash between the serious presentation and the outrageous content. (See Waisanen, 2011).

5 Something is invariably missed in a literature search, but some trends are fairly easy to spot. Whereas research in the TV shows is prolific and easy to find, it takes some work to dig up even the limited number of studies on the news satire sites represented in the present article.

two also share central features, as they both unite parody and satire of news services as an approach to current events. This reflects the fact that they previously have had a joint genre label, "fake news". (See, for instance, Berkowitz & Schwarz, 2016; Reilly 2012, Amarasingam 2011, and Kaye 2010).[6] Of course, with the American election of 2016, and the rise of Trump, the genre label "fake news" has acquired a new and much more ominous role in contemporary politics.

However that may be, in the current context, it makes sense to treat the two as sides, or sub-genres, of the same genre. Readers are invited to make their own assessments as to the broader applicability or validity of this. Incidentally, BBC's *The Mash Report* combines satiric commentary in the vein of Stewart and Colbert with fully invented news stories in the tradition of *The Onion*.

6.4 News Satire as Parody and Satire

The genre label (Nyboe, 2017) "News satire" consists of two very different genres, "news" and "satire". This label reflects the self-representation of the news satire outlets themselves where variations on the genre label dominate. Thus, *Last Week Tonight with John Oliver*'s self-presentation makes the satiric intent explicit: "Breaking news, on a weekly basis. Comedian John Oliver satirically covers the week in news, politics and current events in this Emmy-winning variety series".[7] Along the same lines, *The Mideast Beast* carries the tagline "Because all news is satirical",[8] *The Beaverton* states in its legal disclaimer that "*The Beaverton* is a news satire and parody publication",[9] and *The Shovel* is equally clear at the bottom of its front page: "The Shovel is Australia's satire news site".[10]

However, another genre is as important, namely, the "parody" represented in *The Beaverton*'s disclaimer alongside satire. As a genre, news satire blends parody and satire.[11] The blending is, in fact, so close that it is very often impossible to establish the boundary between the two genres in news satire. The mixture of parody and satire is not unique to the genre, but is relatively common, historically speaking all the way

6 To confuse matters further, Acter speaks of *The Daily Show with Jon Stewart* as "news parody" (2008, 278). The team running *heute-show*'s twitter-profile confirms that the "Nachrictensatire" is one of the genre labels the show's anchor uses to characterize the show. (https://twitter.com/heuteshow/status/1006092722267152384). Seen June 11th, 2018.

7 Seen January 8th, 2019.

8 Seen January 7th, 2019.

9 Seen January 8th, 2019.

10 Seen January 8th, 2019.

11 The double genre character is also visible in the legal disclaimer of *The Duffel Blog*: "Duffel Blog is a parody of a news organization, and all content it publishes is satirical in nature. https://www.duffelblog.com/about/disclaimer/. Seen on January 8th, 2019.

back to antiquity; a well-known example could be Theofrastos' *Characters* which satirizes various forms of human folly through biting parodic renderings of a number of personality types.[12] Therefore, the interesting thing about news satire is not *that* the genres blend but *how*.

Parody works by making elements of the parodied intermingle with incongruent new elements leading to a clash within the parodic work. It is, thus, a "double-voiced discourse and, as such, addresses a sophisticated reader or viewer expected to decode multiple texts in dialogic relation" (Druick, 2009, 301). The fact that the news genre has become the object of parody is not surprising given that, according to Mikhail Bakhtin, "there never was a single strictly straightforward genre [...] that did not have its own parodying and travestying double, its own comic-ironic *contrepartie*" (Bakhtin, 1981, 53). In an already classic description, Linda Hutcheon notes that parody is "a form of imitation, but imitation characterized by ironic inversion, not always at the expense of the parodied text. [...] parody is, in another formulation, repetition with critical distance, which marks difference rather than similarity" (Hutcheon, 1985, 6). News satire works this formula by establishing a clash of elements. It repeats the visual layout, the choice of subject matter, the rhetoric, the language, and the structure of a variety of different news outlets (repetition), but at the same time undercuts these elements by adding less serious, silly, or just plain odd elements brought in by the news satirists themselves (difference).[13] For instance, shifts in sociolects or syntax and substitution of persons or subjects are common parody signals often found in news satire (see for instance, Rose, 1993, 37; Hariman 2008, 250).

Satire is as complex as parody. It uses humor to taunt and criticize failings, selfishness, human shortcomings, and ridiculousness in the surrounding society. Satire criticizes through humor. In fact, in the words of Ian Reilly, "criticism forms, in large part, the kernel of satire's broader project" (Reilly, 2010, 34). Historically, it has been used to expose moral vices (greed, hypocrisy, corruption) and undermine those in power, thereby destabilizing social order (Condren, 2014, 1069). Through humor, it creates a community of those laughing against those laughed at. Interestingly, the two groups can be overlapping. For instance, you can satirize weaknesses of human nature to elicit laughter from humans sharing said nature. Along the same lines, satire is often sharply critical of its target and commonly is associated with aggression, as Northrop Frye's widely cited definition of satire as "militant irony" also highlights (Frye, 1973, 223).[14] However, it does not need to be aggressive. It can be quite mild, and may embrace its target while poking fun at it.

12 See also Hutcheon (1985, 43–68).

13 For more see Acter (2008).

14 See also Berger (1997).

News satire expounds the full range of options in satire, from lightly teasing pieces to full-on attacks.[15] Moreover, it appears in all the different genres of the ordinary news stream, reports, interviews, reviews, photo reporting, commentary, background reporting among others, and it mimics written news, radio news, and television newscasts.

Whereas the parodic gist in news satire is usually, though not always, directed at the supposedly serious news services, its satire is broader. Not only can news satire stories target anything covered by the news media, being fictional, they can even pick up topics beyond those accessible to other media. Thus, there are wide limits to what can be reflected in the skewed mirror of news satire. Nothing is beneath the interest of news satire and nothing is above it. Even if something is too sacrosanct in culture to criticize, news satire finds a way to bite. For example, at the death of Nelson Mandela, *The Onion* published a story titled "Nelson Mandela Becomes First Politician To Be Missed".[16] It adhered completely to the "de mortuis nil nisi bene"-rule of the obituary, and yet found an angle for crass satire, which even highlighted the accomplishment of the deceased.

It follows from what has been said above that even though news satire skewers the news, and often either tells invented stories or inserts invented information into otherwise real stories, the genre is unlike what is now known as "fake news", as it does not seek to spread misinformation (Søe, 2017). Not only does the genre employ numerous and heavily signaled ironic moves (Booth, 1974; Hutcheon, 1994) to ensure that the recipient understands the irony, it misses its first and fundamental purpose, laughter, when this does not happen. For the very same reason, another kind of hilarity ensures when people still pick up the satire news stories as factual reporting because they are not being cheated, as those who fall for fake news, they actually and actively cheat themselves as evidenced by, for instance, the notorious exchange between *The Onion* and *The People's Daily* (Deen, 2015).

The techniques and the rhetorical practice associated with news satire are frequently expanded beyond their original genre contexts into other genres. Examples of this could be *The Daily Show*'s twin coffee table books *America (The Book)* and *Earth (The Book)* (Stewart 2006, 2010). The factual character of the encyclopedia seems to make it an attractive target genre. Probably the most common genre in this field is the parodic encyclopedia; the largest online version, *UnCyclopedia* links to numerous other parodic encyclopedias in many languages, some of them stylistically loose,

15 At the mild end you find many, though definitely not all, the micro news stories, like "Grammar Nazi's Day Ruined after Seeing Spalling Mistake". At the more aggressive something like "Asshole Awarded For Asshole Behavior By Business Community Leaders", in which an award ceremony in the business world is described in a language switching repeatedly between established journalistic expressions and explicit takedowns similar to the "asshole".

16 Seen August 29th, 2018.

as is often the case with amateur work in news satire. *The Onion*, too, kicks in with *The Onion Book of Known Knowledge* (Harris, Reiss, Roeder, & Tracy, 2012) which also recalls the coffee table book. A further target is clickbait culture, most prominently through the site *Clickhole* which preys upon the forms, the rhetoric, and the ideology expressed in the genres of clickbait-sites like *Buzzfeed, Distratify and Upworthy*.

6.5 News Satire as News

As a form of news, albeit a non-standard one, news satire has an extensive and multi-faceted relationship to the news reflected in the surrounding, and nominally more serious, media landscape. News satire largely responds to the same political, social, cultural, and economic events as other news genres. These events may be re-framed, re-interpreted, juxtaposed, twisted, or skewed in the course of their representation in news satire. However, the connection back to the original events, or to the representation of said events in the media landscape, must be recognizable, or the satiric effect is lost. This is true even in the cases where a story is fully made up, and is not related to any particular media story, as is the case with many micro-news stories in the local-news sections of news satire sites. These stories deploy all the usual techniques of journalism to describe events that are clearly too small to justify journalistic treatment, thus highlighting the artificiality of the journalistic genres while extracting mirth from the everyday situations described.

There is not always one clearly defined event behind a satiric news story. Other sides of the news can be targeted. Indeed, the target may be the media genres themselves, the reportage, the op-ed, the news telegram, the business special, or the lifestyle article. In addition, the inspiration may be other phenomena not immediately related to current events that are reframed within news satire; twisted into the often deliberately ill-fitting form of a news story. These topics range from theology, "Aging God fitted for Omni-Focals"[17] (*The Onion*), over historical events, "The Christmas Tree is a Grave Blow to Danishness (from the archive, year 1808)" ("Juletræet er et voldsomt Anslag mod Danskheden (fra arkivet, år 1808)") (*RokokoPosten*),[18] to serial jokes, "'I should have never crossed that fucking road' admits chicken" (*Waterford Whispers News*).[19] The genre treats these topics according to the normal approach of news. Thus, the chicken from the serial joke gets its life story told by an impressed journalist who is clearly in awe and moved by being in the presence of this important cultural figure. In cases such as these the inspiration is not an immediate news event, but it is the existence of the news media genres themselves that allows news satire

17 Seen August 29th, 2018.
18 Seen August 29th, 2018.
19 Seen August 29th, 2018.

to treat a genre-foreign story, as if it was a genre commonplace. Through their genre practices, they offer up not just news, but a number of genre templates for telling a story. What news satire does in these cases is to take up the template (repetition), but apply it to a material that is usually seen as foreign (difference) to the template.

6.6 News Satire on ACC

News satire is primarily a form of humor. Therefore, satire stories, whatever moral role they might get to play, are humor pieces, and the genre's first purpose is laughter (Wiesman, 2011). Quite likely, the satirists and their audiences meet in this. The entertainment value seems to be one of the primary motivations for engaging with news satire (Young, 2013). There is a deeper point to this, but the obvious consequence is that not all stories involving ACC push a clear political agenda. Thus, *The Babylon Bee*, which mainly concerns itself with American church life, ran the story "Chief Cause Of Climate Change Revealed To Be Fire Metaphors In Worship Songs",[20] using ACC as a means to poke fun at another, less dramatic issue, the imagery in church singing. Along similar lines, *Waterford Whispers News* has the story "Rain Stops In Galway For Record 17 Minutes"[21] where the target of the joke is the dreary Irish weather, climate change is used for emphasis rather than being at the center of the story. The article concludes its description of the weather anomaly by stating that "there was some concern from meteorologists that the dry spell could be a sign of climate change, stating that dry weather in Galway could be more worrying than polar ice caps melting".

So not all news satire on ACC conveys a clear political message. Take, for instance, the *Clickhole* article "Environmental Win! This Couple Is Infertile".[22] The story argues that a couple's infertility is a climate victory, as it saves the world from "as many as three carbon-emitting children" that the couple initially had planned to have. Infertility is not the butt of the joke, however, and neither is climate change. The article, instead, takes aim – satirically and parodically – at another common news genre, the inspirational human interest story. This is underlined by the extensive use of exclamation points and exaggerated enthusiasm in the article, as if it was somehow telling a story worth celebrating. Another example is a story by *The Beaverton* titled "Local man unable to resist pointing out how beautiful day actually is a sign of climate

20 Seen December 13th, 2017.

21 Seen March 24th, 2018. A parallel story is found in *The Daily Squat*: "'We don't know how Northerners will react to sunlight if global warming isn't halted', warns climate expert". http://www.dailysquat.com/dont-know-northerners-will-react-sunlight-global-warming-isnt-halted-warns-climate-expert/. Seen March 28th, 2018.

22 Seen August 29th, 2018.

apocalypse".[23] It randomly describes a day at some office, where "local man Geoffrey McLeod" simply cannot let his co-workers enjoy the nice weather, but must give voice to the dire predictions for the climate. Like in a typical news story, McLeod is given the chance to comment on his pessimistic remarks: "'I tried, I really tried to hold it in,' said McLeod. 'But I had to do my part for the environment by not letting people enjoy even a few brief moments of happiness'". But even when used in this spurious manner, ACC throws a shade over the silliness, as the tragedy of infertility is described as a form of triumph, and the all too familiar shade of doubt as to the possible ACC-origin of nice weather is given shape in the ever so slightly neurotic figure of Geoffrey McLeod.[24]

6.7 The Material

News satire is a notoriously volatile field. *The Onion* has been around for decades, and with the fairly successful transition of *The Daily Show* from Jon Stewart to Trevor Noah the show has entered its third decade in good shape. Beyond that, the landscape changes swiftly, and few news services last for many years. Moreover, many official news media dabble in satire on a regular basis, and satire programs on TV frequently feature elements of news satire. Also, news satire plays out in many countries and in many languages, and even discovering any given satire news service is not a given, if you don't partake in its cultural circle. An obvious example to the present authors is the Danish news satire service *RokokoPosten. Siden 1732* (The Rococo Post. Since 1732 (actual founding year: 2010)) that has been well-nigh legendary in the Danish media landscape almost since its foundation in 2010, but at the present point in time not even registered on the Wikipedia-list of "satirical news websites",[25] much less found notable enough for a specific entry. Thus, a full tracking of news satire's representation of ACC is beyond the reach of the present chapter.

Instead, we have searched 28 different news satire sites for the phrases "climate change" and "global warming". We have also reviewed the coverage of ACC on 6–7 news satire TV-shows.[26] The list of reviewed satire news services are listed separately in the chapter's bibliography; individual stories are referenced in the footnotes. The number of items available varies strongly from news service to news service. Thus, *The Onion* and *The Daily Mash* feature page after page of related stories, whereas

23 Seen August 29th, 2018.

24 McLeod and his attitude may even be a broadly recognizable figure, see Kirilenko, Molodotsova & Stepchenkova (2015).

25 Seen March 2nd, 2018.

26 The variation depends on whether you consider *The Daily Show* as one or two shows in the tenure of Jon Stewart and Trevor Noah.

others have few if any. Many factors influence this difference: the age and size of any given satire news service is central; an older, larger site will have more stories about ACC as a simple function of having more stories in the first place. In addition, a number of services are subject-specific, and only address ACC intermittently when it touches upon this subject. Thus, climate change plays a role on the catholic news satire site *Eye of the Tiber*, in several stories connected to the papal encyclical on climate change, but is barely mentioned otherwise.

The overall number of stories on climate change is equally hard to measure, as it would require a precise demarcation of what constitutes a story "on" climate change vis-à-vis a story that merely "refers to" climate change. Though there are many clear examples of one or the other, and both are interesting, such a line is impossible to draw. However you measure it, the ensuing material encompasses several hundred stories of which only a minor portion can be represented here.

6.8 Ridiculing Denialism

The most important target of news satire in relation to ACC is undoubtedly, and by a wide margin, climate denialism. Thus, the opening example of this chapter featuring "local climate change denier Michael Dunn" to a large extent encapsulates the stance of news satire vis-à-vis ACC.

The excessive emphasis awarded the opinion of climate change deniers is followed through to a *reductio ad absurdum* in an article in *The Beaverton* titled "Climate scientists seeking opinion of stupid idiot to complete study".[27] In it, Dr. Naomi Prashad, the spokesperson of a group of climate researchers, explains why the inclusion of the opinions of "a total brow-furrowing goddamn dolt" would help the researchers finalize their studies.

> 'It's just very useful, to be forced to address the most ignorant views from ninnies who have done no work of their own,' Prashad noted. 'Look at the breakthroughs NASA is experiencing right now: gravitational waves, new solar systems – and they've had to spend a ton of time acknowledging flat-earthers. I don't think it's a coincidence.'

As is obvious, the *Beaverton* story repeatedly undercuts its presumed surface meaning by adding a series of derogatory descriptions to the climate denier sought for. The comical paradox being, of course, that the article treats the inclusion of obviously ill-founded opinions as a prerequisite for scientific quality. This paradox is highlighted in the ironic claim that the denialist opinions could be as important for breakthroughs in climate science, as the acknowledgment of flat-earthers has been for NASA.

27 Seen August 29th, 2018.

The irony, of course, rests in the fact that not only has there never been a positive influence on NASAs work from having to debate flat-earthers; NASA has never been required to work extensively and repeatedly through arguments from flat-earthers as that would evidently be a waste of time. By consequence, the requirement that climate scientists are constantly asked to justify their work against scientifically unqualified climate deniers is reduced to the scientific absurdity it always was.

A parallel approach is found in *Last Week Tonight with John Oliver*'s now rightfully famous segment "A Statistically Representative Climate Change Debate".[28] In the latter, a TV debate on the reality of ACC is set up to match the actual division among the scientists, thus including three "sceptics" and a veritable flood of proponents representing the alleged 97% of climate scientist that hold ACC to be real (for the number itself, see Cook, et al., 2016).[29] The result, of course, is a complete flooding of the skeptics – demonstrating visually how overwhelming the scientific consensus actually is.[30]

Similar positions against the ridiculousness of climate change denialism can be found in stories like "Science Is A Hoax, Man Types On Small Electronic Device That Can Do Everything"[31] (*The Shovel*), "Climate change skeptic is fine with all other science"[32] (*The Daily Mash*), or "Climate skeptics: The weather has a leftist bias" ("Klimaskeptikere: Vejret har venstreorienteret slagside")[33] (*RokokoPosten*).

A particular target in this category is the person who conflates weather and climate and claims that local cold weather events contradict the existence of ACC. This leads to stories like "Polar Vortex Causes Hundreds of Injuries as People Making Snide Remarks About Climate Change Are Punched in Face"[34] (*The Borowitz Report*) or "Man feeling a bit chilly declares it to be proof that global warming is hoax"[35] (*NewsThump*).

28 Seen March 1st, 2018. See also Brewer & McKnight (2017).

29 The 97% figure, which seem to be one of the more successful pieces of ACC-information in play, is used to effect again by Rachel Parris in *The Mash Report*: https://www.youtube.com/watch?v=GN8dLESkzWQ&t=4s

30 There are probably less than 97 people present, they do not fit in the picture frame which is set for a "normal" TV debate, but the impression is overwhelming, nonetheless.

31 Seen March 1st, 2018.

32 Seen March 1st, 2018.

33 Seen March 2nd, 2018.

34 Seen March 1st, 2018.

35 Seen March 1st, 2018.

6.9 The Passive Politicians

Another frequent target is the lack of public action towards climate change. This is seen in a segment from *heute-show*, the German version of *The Daily Show*, made for the November 2017 UN Climate Change Conference in Bonn. "Reporting" from what is allegedly the German info-booth at the conference, one of the show's senior correspondents, Tina Hausten, attempts to answer a question from the show's anchor, Oliver Welke, about what the world should learn from Germany when it comes to climate change. Hausten does this by presenting a poster with Germany's supposed motto for the conference: "THINK BIG and then do absolutely NÜSCHTE". The double shift in language is telling. First, it moves to English to mark the hip, international ambience of the conference, then, at the point of bathos, it reverts to German with the slangish "NÜSCHTE" which translates approximately as "nada" or "zilch". The segment then proceeds, with Hausten in a consistently ironic stance, moving through a brief, yet brutally effective presentation of the lack of coherent action in German climate politics, to the therefore inevitable climate breakdown and ending up in advice to her daughters to just have fun and consume away while there is still time. Following through to a *reductio ad absurdum*, at the end of the segment the info-booth is filled with people dancing and celebrating – completely consistent with Heusen's surface message, and utterly at odds with the grave threat posed by the shifting climate also laid bare in her presentation.

Along the same lines, many satiric news stories specifically target the politician as passive or as a climate change denier. Such news stories typically revolve around politicians trying to pass legislation outlawing climate change without resolving the underlying issue. *The Shovel*, for instance, reports: "White House Cancels Climate Change",[36] and similarly, in another story, that Australia and other countries plan to "withdraw from climate change".[37] Since future predictions for the climate are grim, a government spokesperson in the article concludes, "climate change is definitely not something we want to be a part of".[38] In the same vein, the claim by Donald Trump that climate change was a Chinese hoax to damage the US thus spawned two parallel stories at *The Rochdale Herald*: "Climate Change still insisting Donald Trump is a Chinese Conspiracy"[39] and "Donald Trump is a hoax, says Global Warming".[40]

Stories like these depict the politician as someone, who willfully believes that climate change is a matter of choice. As such, they serve to amplify that politicians

36 Seen December 1st, 2017.

37 Seen December 1st, 2017.

38 See also: https://www.thebeaverton.com/2017/06/trump-pulls-climate-change-agreement-hopes-climate-will-cave-give-better-deal/. Seen December 1st, 2017.

39 Seen March 14th, 2018.

40 Seen March 14th, 2018.

would rather withdraw from or cancel their involvement in climate change in order to avoid dealing with its consequences.

Thus, news satire may also qualify as political humor as it serves a critical function: By targeting political inaction and evasion of responsibility when it comes to climate change, such stories simultaneously ridicule and undermine political authority and expose "discrepancies between how things are and how things should be" (Møller, 2018, 38). This is all summarized in *The Onion Book of Known Knowledge*'s entry on "Pollution": "release of dangerous contaminants into the environment that can wait until later to be rectified, unlike steroid abuse in sports, bullying, Internet piracy, and $2 bank fees." (Harris, Reiss, Roeder, & Tracy, 2012, 153)

A particularly bleak version of this criticism comes from the otherwise fairly polite Danish site *RokokoPosten*; a 2015 story has the headline "World leaders: now we really have to do something about those climate changes" (From the future archive, 2053)" ("Verdensledere: Nu skal vi altså virkelig gøre noget ved de klimaforandringer (fra fremtidsarkivet, 2053)").[41] In this story from the future, nothing consequential has happened in the political reaction to ACC, numerous species have died out, others, including quite common ones like house sparrows and badgers, are on the brink of extinction. Half of Africa is uninhabitable, and New Zealand flooded. In the face of this, the politicians are finally moving into action; or so they say. The level of action actually proposed, however, is abysmally insufficient; the US moves to reduce its emissions by 0.03% and "try to make the state of Maine almost completely C02 neutral", and Mongolia promises to get 14% of its energy from renewable sources. So, the story basically takes a pessimistic view of current political discourse concerning ACC and projects it forty years into the future, thus making the dissonance between the gravity of the situation and the lack of political action even more evident.

6.10 A Grim Outlook and a Laugh

A lot of news satire on ACC is definitely bleak in outlook. We have already seen an example of a very grim approach in the segment from *heute-show*. Nevertheless, the implications of the *heute-show* story still were that something could actually be done, and that the fault was with political inaction. However, stories taking the inevitability of climate disaster as their starting point are fairly prolific and can be found in a variety of contexts. A parallel take can be found in the *Rochdale Herald* story "Break-

41 Seen August 29th, 2018.

ing: Climate Change Inevitable Declare Scientists"[42] containing this harsh statement among others, supposedly from a climate researcher called Simon Winter:

> You can switch your lights off all you want, stop using air freshener and deodorant or buy an electric car. It doesn't matter because China are burning more coal than we did during the entire industrial revolution every day and cows are farting out holes in the ozone layer bigger than Africa every 30 minutes. Basically we're fucked.

The quote presents the hopelessness and futility of action without any hope, and without much in the way of redeeming humor. In particular, the quote targets minuscule action taken on an individual level as useless compared to the global developments. The same target can be found in other stories like "Climate Experts Say Only Hope For Saving Planet Lies With People Who Save Napkins From Takeout Order"[43] (*The Onion)* and "Woman successfully offsets huge carbon footprint by sharing climate change article on Facebook" [44] (*NewsThump*) both of which mock ineffectual climate activism.

These kinds of stories are what might be called big-picture stories. They rarely target actual events, the way *heute-show* targeted the UN climate summit or *Last Week Tonight with John Oliver* targets Donald Trump's announcement that the US would leave the Paris treaty. Instead, they address the big-picture news of the deterioration of the ecosystem and the long-standing political passivity connected to it. Moreover, they make the fears harbored by many people involved in the climate debate, including their feelings of personal responsibility, or – the other way around – their feeling of powerlessness to change anything. They follow the grim prediction of climate research through to their bleakest possible conclusion – and sometimes twist them and turn them for comical effect. This is true also when news satirist move into other genres, thus the entry on "Global Warming" in *The Onion Book of Known Knowledge* describes it as a global threat to civilization that becomes irreversible during the time it takes the reader to read the entry itself. The rendering of what an ocean is, is similarly dark: "continually rising body of water that in 250 years will be a vast ecosystem consisting of fish, algae, abandoned buildings, and 10 billion dead bodies" (144). Similarly, *The Onion*'s atlas, *Our Dumb World*, repeatedly refers to the effect of ACC, thus the Maldives are described as so low-lying as to be "gravely threatened by melting polar ice caps, light rain, and kids doing cannonballs off the coast of India" (198). Also, the description of the South Pole as a hellish ice-scape concludes: "Most agree that Antarctica will soon become a popular vacation spot for tourists looking to escape the 140-degree temperatures and massive flooding of the rest of the world" (Dikkers, DiCenzo, Guterman, & Randazzo, 2007, 238).

42 Seen April 4th, 2018.
43 Seen April 9th, 2018.
44 Seen April 9th, 2018.

6.11 News Satire for Political Action

The genre use in news satire's treatment of ACC is fairly classical by the genre's own norms and practices. It is probably not feasible to claim ACC news satire as a distinct genre compared to news satire in general in the way, for instance, Cli-Fi is identifiable as a distinct genre of fiction. There are no particular techniques used and no rhetorical purposes distinct from the overall purposes of news satire, in themselves complex. However, two trends do stand out – they are not enough to make a distinct genre but noticeable nonetheless. First, news satire's take on ACC is remarkably consistent. Whereas it usually takes on all possible sides in any given debate, in this one it is well-nigh unidirectional;[45] it consistently confirms the reality and severity of ACC and ridicules denialism.[46] Second, the apocalyptic language recurrently present in the coverage of ACC is an otherwise rare phenomenon in news satire – except in a few stories dealing with theological subjects, like *The Beaverton*'s "Antichrist able to hire five horsewomen of the apocalypse for the cost of four horsemen".[47] Thus, with these exemptions in mind, the way news satire as a genre handles ACC, and tries to act through its utterances, may feasibly be expected to be a parallel to the way it works in other instances.

It is known that news satire can affect the perception of ACC in their addressees. Several studies have investigated the impact of news satire on the public's perception of ACC. A number of studies conclude that satirical TV news programs such as *The Daily Show, The Colbert Report*, and *Last Week Tonight* affirm the reality of ACC (Feldman, Leiserowitz, & Maibach, 2011; Feldman 2013; Brewer & McKnight 2015, 2017) and, as a result, may shape audience perception of global warming (Feldman 2013; Brewer & McKnight 2015, 2017). Less is known about the impact of news satire sites like *The Onion*. Several possible impact indicators are possible for news satire

45 Something is inevitably missed in a search like this, but all we have found is a handful amateur stories on *Newsbiscuit*, some fairly vague stories on dedicated conservative sites and a single more professionally done story on *Call the Cops*. The latter story can be found here: http://www.callthecops.net/arrest-warrant-issued-al-gore-theft-nobel-prize/. Seen March 6th, 2018. A possible, though not definite, addition is this story from *Waterford Whispers News*: https://waterfordwhispersnews.com/2016/05/10/dublin-man-beaten-to-death-for-querying-climate-change/. Seen March 6th, 2018. Another possible candidate could be this story from *the pan-arabia enquirer*: http://www.panarabiaenquirer.com/wordpress/ive-flown-half-way-around-world-clear-message-reduce-carbon-emissions/. Seen July 16th, 2018.

46 This claim contradicts Feldman (2013) who sees a fairly large percentage of statements about ACC on *The Daily Show With John Stewart* and *The Colbert Report* as either dismissive of or at least challenging the severity of ACC. The examples of this given by Feldman, however, are all clearly ironic and not to be taken at face value. This irony is not incidental, but defining for the discourse in both shows and in news satire generally. They are, thus, not dismissive of the severity of ACC, but highlights it through irony.

47 Seen on May 24th, 2018.

services; one such could be their general reach as shown by their respective representations on social media. Looking at leading sites *The Onion* has 11 million followers on Twitter, *The Daily Show with Trevor Noah* has 7,73 million, *The Daily Mash* has 143,000, and *Der Postillion* has 764,000. This puts them on par with leading politicians in their respective countries. By comparison prominent US politicians like VP Mike Pence or Senator Elisabeth Warren have 6,9 and 4,73 million followers, respectively. In the UK, first-line politicians have a significantly larger number of twitter followers than *The Daily Mash*, for instance Boris Johnson at 507,000 followers and Jeremy Corbyn at 1,9 million. *The Daily Mash*, however, does surpass other prominent politician like Keir Stamer (128,000) or Anna Soubry (118,000).[48] These figures have little to say about the impact of individual stories, but they do indicate that there is a social and political arena available for these stories to influence.

How does news satire act in this arena? Current research indicates that to break down ideological barriers effectively climate communication must be "Thoughtful, respectful, and deliberative" (Moser 2016, 352; see also Moser & Berzonsky, 2015). Yet, as is evident from the examples given, seen from one perspective news satire on climate change frequently appears to be anything but. It is rarely thoughtful. It does acknowledge the basic results of ACC science that climate change is real, serious, and connected to human activity. Beyond that, however, it does not stick to the facts, but invents information freely and runs with any odd idea that can draw a laugh; "objectivity of information presentation is not of primary concern (or even a matter of concern at all)" (Landreville, 2015, 562).

News satire is recurrently disrespectful. Even if this is unsurprising, given that both of the basic genres involved, parody and satire, are generally disrespectful, the approach to climate change is distinctly aggressive even by that standard. News satire is known to break norms of rhetorical objectivity entrenched in journalism; it argues with a chain saw. It routinely resorts to name-calling, often in very creative ways, but name-calling nonetheless, and it is merciless in its treatment of its targets. Thus, in one section *Full Frontal with Samantha Bee* sets up a Hell House to convert a group of hardline climate denialists, but only manages to convince one person, and only because that person is flabbergasted by the utter stupidity of the people with whom she has been on the Hell House tour. News satire, thus, does not strive for a balanced coverage, but for maximum effect, frequently by disrespecting its targets as much as at all possible.

News satire does not appear deliberative. It skips arguments and jumps to conclusions, it does not address the arguments of its targets with sympathy and recognition, it does not engage in a back-and-forth to arrive at points of joint understanding, and it does not lay out its own theoretical and ideological underpinnings for common scrutiny. In its projections of the future effects of current actions, it repeatedly states the

48 All numbers checked on January 9, 2019.

worst possible outcome; and it frequently seems to discourage as meaningless any kind of action to mitigate the looming disaster. Thus, taken on the surface meaning alone satire news stories like these are not conducive to any kind of deliberative action, merely to fear, or even panic.

However, when seen from another angle, central features of news satire work clearly to inform and to encourage action in relation to ACC. We leave aside the oft-discussed relationship between storytelling and climate engagement (Moser, 2016 with further reference). The question is highly relevant and deserving of further investigation, but beyond what can be reasonably covered in a chapter like the present. Instead, we will highlight some of the other features where the genre engages in meaningful climate communication. Again, laughter is key. Even if the humor appears grim and aggressive, an obvious respect for the reader or viewer is present at a genre level in news satire, and this may prove to be an important part of its communicative strength. As previously stated, the first purpose of news satire as a humor genre is laughter. However, the laughter in news satire presupposes knowledge of current events, an ability to make complex moves in genre interpretation (Auken, 2015), and an advanced ability to decode parody and irony. In this sense, the hilarity following when a news satire story is taken at face value springs from the surprise of seeing somebody proving themselves unworthy of that respect. Therefore, news satire in its most fundamental genre features respects the independent intelligence of its intended receiver, and thus news satire on ACC communicates the fundamentals of science and the exigent character of the problem while encouraging the receiver to apply her own wit to decipher the message. It engages the viewer actively as an interpreter.

Thus, news satire's recurrent apocalyptic bleakness takes up the fear, dread, and ensuing apathy, in the meeting with the threat of ACC and turns them into laughter. This laughter may be dark to the extreme, but it still offers a different, and more bearable, emotional response to the gravity of the climate threat, and a way to talk about it without succumbing to despair, because the presentation of it is mixed with wit, irony, artistry, and laughter.

The free relation to facts notwithstanding, news satire represents the scientific consensus about ACC better than does much supposed journalism, since it has the basics right: the scientific consensus on the reality and severity of ACC and the grave and dangerous, yet utterly spurious, nature of climate denialism. By consequence, news satire avoids the false balance issues (Antilla, 2005; Boykoff & Boykoff, 2004, 2007; Schmidt, Ivanova & Schäfer, 2013; see also Benestad, Nuccitelli, Lewandowsky, Hayhoe, Hygen, Dorland, & Cook, 2017) that have recurrently muddled valid information about ACC with disinformation by giving recurrent equal coverage to scientifically speaking marginal views. Moreover, news satire denies the denialists the air of swagger, boldness, or interesting bad-boy notoriety, sometimes afforded them in mainstream news coverage (Boykoff, 2013). This is true both when news satire targets named politicians, and when it invents figures for a given story. The ACC denier is, almost invariably, a ridiculous and delusional figure.

In several critical ways this is, in fact, respectful, thoughtful, and deliberative. As previously stated, satire as a genre divides people into two categories, those laughing and those laughed at. The requirement in news satire to be among the laughers is the basic acceptance of climate science and a critical stance towards ineffectual politicians and phony forms of action. This stance is itself a constructive starting point for a sensible approach to climate action.[49]

6.12 News Satire Sites

Call the Cops
Clickhole
Daily Squat
Der Postillion
Duffel Blog
Eye of the Tiber
Faking News
Lark News
NewsThumb
Newsbiscuit
Reductress
RokokoPosten
Southend News Network
The Babylon Bee
The Beaverton
The Borowitz Report
The Civilian
The Daily Mash
The Daily Squat
The Onion
The Mideast Beast
The Rochdale Herald
The Shovel
the pan-arabia enquirer
They Know Nothing
Very Erzatzt News
Waterford Whisperer News
UnNews (not searchable)

49 The authors wish to thank Amy Devitt for her insights at a crucial point in the process. Thanks are also due to Maria Damkjær and Gísli Magnusson.

6.13 TV-shows

Full Frontal with Samantha Bee
Heute-show
Last Week Tonight With John Oliver
The Colbert Report
The Daily Show with Jon Stewart
The Daily Show with Trevor Noah
The Mash Report

References

Achter, P. (2008). Comedy in unfunny times: News parody and carnival after 9/11. *Critical Studies in Media Communication, 25*(3), 274–303. doi:10.1080/01463373.2011.615690.

Anderson, A.A., & Huntington, H.E. (2017). Social media, science, and attack discourse: How Twitter discussions of climate change use sarcasm and incivilit. *Science Communication 2017, 39*(5), 598–620. doi:10.1177/1075547017735113.

Antilla, L. (2005). Climate of scepticism: US newspaper coverage of the science of climate change. *Global Environmental Change, 15*, 338–352. doi:10.1016/j.gloenvcha.2005.08.003.

Auken, S. (2015a). Genre and interpretation. In S. Auken, P.S. Lauridsen, & A.J. Rasmussen (Eds.), *Genre and …* (154–183). Copenhagen: Ekbátana (Copenhagen Studies in Genre; vol. 2).

Auken, S. (2015b). Utterance and function in genre studies: A literary perspective. In J. Andersen (Ed.), *Genre theory in information studies* (155–178). Bingley: Emerald Group Publishing Limited. doi:10.1108/S2055-537720140000011009.

Bakhtin, M. (1981). *The dialogic imagination* (C. Emerson & M. Holquist, Trans.). Austin: University of Texas Press.

Benestad, R.E., Nuccitelli, D., Lewandowsky, S., Hayhoe, K., Hygen, H.O., Dorland, R. v., & Cook, J. (2016). Learning from mistakes in climate research. *Theoretical and Applied Climatology, 126*(3-4), 699–703. doi:10.1007/s00704-015-1597-5.

Berger, P.L. (1997). *Redeeming laughter: The comic dimension of human experience*. Berlin: De Gruyter.

Berkowitz, D., & Asa, S.D. (2016). Miley, CNN and The Onion. When fake news becomes realer than real. *Journalism Practice, 10*(1), 1–17. doi:10.1080/17512786.2015.1006933.

Boykoff, M.T. (2013). Public Enemy No. 1? Understanding media representations of outlier views on climate change. *American Behavioral Scientist, 57*(6), 796–817. doi:10.1177/0002764213476846.

Boykoff, M.T., & Boykoff, J.M. (2004). Balance as bias: global warming and the US prestige press. *Global Environmental Change, 14*, 125–136. doi:10.1016/j.gloenvcha.2003.10.001.

Boykoff, M.T., & Boykoff, J.M. (2007). Climate change and journalistic norms: A case-study of US mass-media coverage. *Geoforum, 38*, 1190–1204. doi:10.1016/j.geoforum.2007.01.008.

Brewer, P.R., & McKnight, J. (2015). Climate as comedy: The effects of satirical television news on climate change perceptions. *Science Communication, 37*(5), 635–657. doi:10.1177/1075547015597911.

Brewer, P.R., & McKnight, J. (2017). "A statistically representative climate change debate": Satirical television news, scientific consensus, and public perceptions of global warming. *Atlantic Journal of Communication, 25*(3), 166–180. doi:10.1080/15456870.2017.1324453.

Condren, C. (2014). Satire. In S. Attardo (Ed.), *Encyclopedia of humor studies* (1069). Thousand Oaks: SAGE Publications.

Cook, J., Oreskes, N., Doran, P.T., Anderegg, W.R.L., Verheggen, B., Maibach, E.W., Rice, K. (2016). Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. *Environmental Research Letters, 11*, 1–7. doi:10.1088/1748-9326/11/4/048002.

Deen, P. (2015). What moral virtues are required to recognize irony? *The Journal of Value Inquiry 50*(1) 51–67. doi:10.1007/s10790-015-9485-x.

Devitt, A. (2009). Re-fusing form in genre study. In J. Giltrow & D. Stein (Eds.), *Genres in the Internet* (27–47). Philadelphia: John Benjamins Publishing Company. doi:10.1075/pbns.188.02dev.

Dikkers, S., DiCenzo, M., Guterman, D., & Randazzo, J. (Eds.). (2007). *Our dumb world. Atlas of the planet Earth.* London: Orion Books.

Feldman, L. (2013). Cloudy with a chance of heat balls: The portrayal of global warming on The Daily Show and The Colbert Report. *International Journal of Communication, 7*, 430–451.

Feldman, L., Leiserowitz, A., & Maibach, E. (2011). The science of satire. The Daily Show and The Colbert Report as sources of public attention to science and the environment. In A. Amarasingam (Ed.), *The Stewart/Colbert effect. Essays on the real impact of fake news* (25–46). Jefferson, North Carolina: McFarland & Company Ltd.

Frye, N. (1973). *Anatomy of criticism. Four essays.* New Jersey: Princeton University Press.

Harris, J., Reiss, S., Roeder, J., & Tracy, W. (Eds.). (2012). *The Onion Book of known knowledge.* New York: Little, Brown and Company.

Hutcheon, L. (1985). *A theory of parody*. New York: Methuen.

Hutcheon, L. (1994). *Irony's edge: The theory and politics of irony*. London: Routledge.

Kaye, S.M. (Ed.) (2010). *The Onion and philosophy. Fake news story true, alleges indignant area professor*. Chicago: Open Court.

Kirilenko, A.P., Molodtsova, T., & Stepchenkova, S.O. (2015). People as sensors: Mass media and local temperature influence climate change discussion on Twitter. *Global Environmental Change, 30*, 92–100. doi:10.1016/j.gloenvcha.2014.11.003.

Landreville, K.D. (2015). Satire as uncertain territory: Uncertainty expression in discussion about political satire, opinion, and news. *Humor, 28*(4), 559–582. doi:10.1515/humor-2015-0105.

Miller, C. (1984). Genre as social action. *Quarterly Journal of Speech, 70*(2), 151–167. doi:10.1080/00335638409383686.

Miller, C., Devitt, A., & Gallagher, V. (2018). Genre: Permanence and change. *Rhetoric Society Quarterly, 48*(3), 269–277. doi:10.1080/02773945.2018.1454194.

Miller, C., & Kelly [now Mehlenbacher], A.R. (Eds.). (2017). *Emerging genres in new media environments*. London: Palgrave Macmillan.

Moser, S.C. (2016). Reflections on climate change communication research and practice in the second decade of the 21st century: what more is there to say? *WIREs Climate Change, 7*, 345–369. doi:10.1002/wcc.403.

Moser, S.C., & Berzonsky, C.L. (2015). There must be more. Communication to close the cultural divide. In K. O'Brien & E. Selboe (Eds.), *The adaptive challenge of climate change* (287–310). New York: Cambridge University Press. doi:10.1017/CBO9781139149389.017.

Møller, M. (2018). *Running for fun, elected for real. A genre based analysis of two comedians' humorous election campaigns*, PhD. Copenhagen: University of Copenhagen.

Nyboe, J.Ø. (2017). The game of the name: Genre labels as genre and signature. *Scandinavian Studies, 88*(4), 364–392.

Otto, F.E.L., Skeie, R.B., Fuglestvedt, J.S., Berntsen, T., & Allen, M.R. (2017). Assigning historic responsibility for extreme weather events. *Nature Climate Change, 7*, 757–759.

Reiff, M.J., & Bawarshi, A. (Eds.). (2016). *Genre and the Performance of publics*. Logan: Utah State University Press.

Reillly, I. (2010). *Satirical fake news and the politics of the fifth estate,* PhD. Ontario: University of Guelph.

Reilly, I. (2012). Satirical fake news and/as American political discourse. *The Journal of American Culture, 35*(3), 258–275.

Schmidt, A., Ivanova, A., & Schäfer, M.S. (2013). Media attention for climate change around the world: A comparative analysis of newspaper coverage in 27 countries. *Global Environmental Change, 23*, 1233–1248. doi:10.1016/j.gloenvcha.2013.07.020.

Stewart, J. (2006). *America. The book: A citizen's guide to democracy inaction*. New York: Warner Books.

Stewart, J. (2010). *Earth (The book)*. New York: Grand Central Publishing.

Tandoc Jr., E.C., Lim, Z.W., & Ling, R. (2017). Defining "fake news". A typology of scholarly definitions. *Digital Journalism*. doi:10.1080/21670811.2017.1360143.

Waisanen, D.J. (2011). Crafting hyperreal spaces for comic insights: The Onion News Network's ironic iconicity. *Communication Quarterly, 59*(5), 508–528. doi:10.1080/01463373.2011.615690.

Wiesman, P. (2011).We frame to please. A preliminary examination of The Daily Show's use of frames In T. Goodnow (Ed.), *The Daily Show and rhetoric* (131–151). New York: Lexington Books.

Young, D.G. (2013). Laughter, learning, or enlightenment? Viewing and avoidance motivations behind The Daily Show and The Colbert Report. *Journal of Broadcasting & Electronic Media, 57*(2), 153–169. doi:10.1080/08838151.2013.787080.

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7 "This will all be yours – and under water": Climate Change Depictions in Editorial Cartoons

Abstract: This chapter examines how climate change as both a series of physical processes and a political debate is satirically depicted in editorial cartoons. We contend that climate change poses a challenge for satire due to the complexities of the issue. The chapter focuses on different ways in which editorial cartoons as a genre may present different exigencies and policy positions by means of humor that skewers its satirical target. In the chapter we present a range of argumentative themes such as "Consequences", "Capitalism", "Ridiculing the Deniers" and "Against Climate Activism" that are prevalent in American editorial cartoons. These themes are based on the study of a large body of such cartoons. The analyses of the chapter work from a genre angle in order to detail the social motives and formal intricacies of editorial cartoons in relation to the topic of climate change. This in turn leads to an argument that editorial cartoons, dealing with the topic of climate change, navigate between specific and more general contexts. Although the interventional or activist potential of editorial cartoons can be called into question, they may be able to promote explicit human angles on the all too often invisible processes of climate change.

7.1 Introduction

As general anticipation for the COP15 climate summit in Copenhagen ramped up during the last months of 2009, so did attention from political satirists. It was within this context that USA Today posted a now famous cartoon by Joel Pett, in which the summit is interrupted by a heckling politician exclaiming, "what if this is a hoax and we create a better world for nothing?" (Pett, 2009). Whilst timely in its humor, skewering one of the top news items of the day with satirical precision, Pett's cartoon also gained an afterlife that went far beyond the specific context of COP15. The cartoon was widely shared online. Furthermore, the joke about creating a better world for nothing proved its mettle over time, and began to appear in wholly new contexts and configurations – signed copies at the EPA, on protest signs, and even as a mural on a garage (Pett, 2012). This tension between original and subsequent contextual usage is made possible by the satirical depiction of the fractious and polarized debate over climate change – one that is often put into the purview of "serious" genres with scientific or policy credentials (Nielsen, 2017; Spoel, Goforth, Cheu & Pearson, 2008; Stahl, 2011). However, Pett's cartoon seems to have struck a chord beyond the initial chuckle and, indeed, illustrates a more general public notion of politicians dragging

their feet on the matter of climate change. Although it gained an unexpected fame, Pett's cartoon is also an example of a typical American editorial cartoon.

In this chapter, we focus on how climate change as a phenomenon and as a political debate is depicted in American editorial cartoons. While political satire may present humorous interpretations of various political and social issues, climate change is challenging to satire, because it is both complex (at times highly technical) and exigent. As the example with Pett illustrates, editorial cartoons may negotiate tension between specific and general contexts, rely on the polarization of the overall debate, and promote explicit human angles. Our enquiry seeks to understand how this established satirical genre deals with a specific complex issue. Based on a collected corpus we present analyses of a range of argumentative themes employed in editorial cartoons that depict climate change. These analyses will be based on a prior established genre-overview, detailing the social motives and formal intricacies of editorial cartoons.

7.2 Satirical Cartoons – a Potent Genre

As mentioned, the enquiry of this chapter focuses on how climate change is represented within the specific genre of editorial cartoons rather than a generic description of editorial cartoons as a genre. However, we note that different scholars have regarded satirical cartoons as a genre (Bal, Pitt, Berthon & DesAutels, 2009; Baumgartner, 2008; Geipel, 1972; Harrison, 1981; Kjeldsen, 2015). While designating something a genre, does not necessarily make it so – as Carolyn Miller has illustrated – it does lend credence to the pursuit of enquiry into climate change representation through a genre lens and by extension a genre description of editorial cartoons (Miller, 1984, 163). Indeed, when looking at the history of editorial cartoons, scholars have noted several antecedent genres (Jamieson, 1975). Such antecedents not only provide a sense of the historical developments or evolution of a genre, but also highlight inherited constraints that may still have contemporary relevance. Thus, the word *cartoon* derives from the late 16th century Italian word *cartone* (from the Latin word *carta*), which used to describe an artist's simple first sketch of a work. While no longer confined to the space of the artist's atelier, cartoons are still generally perceived as formally simple drawings (Lamb, 2004). Although drawn caricatures have been used throughout history, contemporary forms of satirical (editorial) cartoons as a "self-enriching genre" mainly grew out of an Anglophone context in 18th and 19th century Britain and America respectively (Geipel, 1972, 11; Harrisson, 1981, 72). Cartoonists such as William Hogarth and Thomas Nast were notable in their time for using cartoons rather than words to launch quite successful campaigns against both corrupt politicians and mindless good taste. With this history in mind, it is important at this point to note that editorial cartoon distinguishes itself from news satire (as seen in the previous chapter). Editorial cartoons have both different generic antecedents and

work through a different media and formal expression. The difference is also one of material context. Editorial cartoons are historically part of a larger news publication (i.e. the editorial pages of a paper), and thus physically border on non-satirical news genres such as editorials or op-eds. However, the cartoon does not itself try to emulate or pass itself off as a mock-up of any such genre, rather it is contingent on its material and discursive delineation on the page. The contemporary perspective of this chapter means that we shall not expound the history of cartoons further (for more on this see for example Geipel, 1972; Keane, 2008; Lamb, 2004). However, we note that the antecedent forms, from which contemporary editorial cartoons emerged, imbue the genre with certain motives and attitudes. Miller's original conception of genre not only rests on notions of function and context, but also on motive (1984, 152) – a term she borrows from Kenneth Burke. To Burke any set of symbolic actions rest on specific motives that are then tied to underlying attitudes toward the larger world (Burke, 1969, 20). Within this context, editorial cartoons are an example of how genre becomes a site of negotiation between private and public motives or attitudes. This can be seen by the relative autonomy of the individual cartoonist with regard to choices of subject matter and visual style compared to certain generic constraints, regarding the overall expressions of social attitudes that mark the genre (Jamieson, 1975; Plug, 2013). Several scholars note the absurdity and caustic tone often associated with satirical cartoons. Indeed, one should not forget nor underestimate the "punch" in punchline, when dealing with editorial cartoons. The humor of satirical depiction is not only directed at a specified target, but also expresses specific attitudes towards said target. Geipel notes that an editorial cartoon acts as "a potent weapon of ridicule, ideal for deflating the pompous and the overbearing, exposing injustice and deriding hypocrisy" (1972, 10). Despite their seemingly innocent humor, editorial cartoons thus exhibit attitudes of suspicion and social indignation both towards the satirical target and the larger social system. There seems to be an overall agreement between scholars that editorial cartoons are marked by an underlying motive of challenging the status quo (Lamb, 2004, 41; Walker, 2003, 10; Barshay, 1977, 57). Indeed, social critique and attacks on established political figures, tribes or discourses may take precedence over witticism as a defining characteristic of the genre.

The tendency in editorial cartoons of mixing humorous caricature with caustic satire of power and hypocrisy illustrates how humor can perform a social regulatory function. According to Billig (2005) "Everyday codes of behaviour are protected by the practice of embarrassment. If one infringes expected codes of interaction, particularly if one does so unwittingly, one might expect to be embarrassed" (201). Editorial cartoons as well as other types of satire (for example news satire) fulfill exactly this social action of pointing out transgressions against codes of conduct and by exposing the hypocrisy of named persons or groups in power. Inducing laughter is thus not an innocent goal, but a key rhetorical strategy. This can be seen in the reliance on caricature as a mode of expression, as it relates the physical features of the satirical target to the nature of their transgression. Drawing George W. Bush as a big-eared

school boy, which many cartoonists were wont to do, was as much a comment on his perceived ineptness as on his appearance. The limits of acceptability of such practices are dictated by the social context – satire may therefore struggle against either long or short term "humor regimes" that implicitly regulate *who* can joke about *what* (Kuipers, 2011). For example, some cartoonists deliberately chose not to make fun of George W. Bush during the time immediately after 9/11, and those that did were heavily criticized (Lamb, 2004).

Like any other genre, cartoons are context-dependent in the sense that they use a specific political context surrounding a person or issue as the basis for their depictions. Their material is often drawn from current political news or by caricaturing the powerful individuals of their time, as "the political regime provides a media context" (Walker, 2003, 18). However, just as editorial cartoons make use of specific contexts in their depictions, they also rely on their readers' implied genre knowledge. Indeed, satirizing of a person or issue often takes the form of referencing or spoofing another genre such as the State of the Union address, a press conference or a marriage ceremony. An example of this is the opening example of Pett's cartoon about COP15. Few of us have ever been to a general assembly in the UN, but those of us, who follow the news, will have some sense of what it looks like, how it is conducted, and what is to be expected or accomplished. The satirized context of a UN general assembly in the cartoon thereby makes sense to readers, allowing them to get the joke. As readers we know such things, because the interpretive tactics associated with genre knowledge are tacit and relational (Miller, 1984, 155; Auken, 2018, 20). Editorial cartoons are thus not isolated from other genres, but rather co-exist with them both discursively (through the depiction of other genres) and physically (on the editorial page of a newspaper). This, however, should not be seen as a classical uptake, but rather as an altogether looser intertextual relationship, illustrating how genres intermingle and influence each other (Freadman, 2002; Spinuzzi & Zachry, 2000; Swales, 1990, 47).

This intermingling also illustrates another point about contemporary satire – namely that it often plays on a notion of "getting it". A joke is partly constructed as an appeal to a certain set of attitudes or a specific sense of humor. Getting the joke thereby presupposes a shared sense of community – or perhaps satirical collusion against those in power (Day, 2011, 148). However, this type of social function cannot come to bear without the specific satirical work being situated within a social or political context. Editorial cartoons therefore build on known issues and pre-existing images, for instance from popular culture, in their depiction of what or who is being satirized – examples of this range from imagery of The Terminator to the use of the famous drawing of the march of human evolution (Grofman, 1989; Baumgartner, 2008).

The fact that editorial cartoons borrow images from popular culture is fitting, considering that the genre itself is a part of popular culture. According to Walker (2003), "editorial cartoons are encyclopedias of popular culture" (19). Walker further argues that "the humorous intervention of a political cartoon does ultimately contrib-

ute to the accumulation of information and formulation of public opinion" (16). While the genre may serve important communal functions in this sense (Miller, 1994), one may question the assumption of the interventionist potential of editorial cartoons, as studies show that it is hard to measure if a particular cartoon made a difference in relation to a specific issue. While editorial cartoons may affect political attitudes, their broader influence on the direction of public opinion seems to be limited (Lamb, 2004, 25; Baumgartner, 2008, 737). The reason for this may be that satirical cartoons are inherently polysemic. The importance of "getting it" rests not only on the social motive of the genre, but also on the fact that people may have different readings of a particular cartoon or not share its specific sense of humor – this would explain the continued potential for causing outrage (Powell, 1977; Walker, 2003; Lamb, 2004).

Most satire, including editorial cartoons, fall under this category of everyday rhetoric that people encounter in situations that are not necessarily themselves politicized (for example when reading the paper, browsing the internet or relaxing in front of the TV). Despite an honest intention of going against the status quo, it would be a stretch to say that editorial cartoons have the power to actually change it. A reason for this is that while they may provide laughs and scoffs, they rarely present an alternative to the status quo – in fact, they are dependent on systems of media circulation that are very much part of it. This is not to say that the editorial cartoon as a genre is less rhetorical or important, far from it. According to Brummett (1991) this type of *quotidian rhetoric*, in reality, is vital for shaping and reaffirming our values and attitudes towards the social structures we encounter in our everyday lives (43). This function also relates to the polysemic nature of such rhetoric as it may invite different readings, trigger different values or be adopted in different ways by different people. Editorial cartoons are neither specific political interventions nor just entertainment, but rather a way to socialize people, shaping political attitudes and beliefs (Baumgartner, 2008, 736).

Working with cartoons calls for an appreciation of their formal and artistic merits. It may be problematic to talk about a common style with regard to editorial cartoons, as drawings may range from sloppily to meticulously drawn, containing only few lines or a detailed illustration. However, certain shared strategies remain. Geipel, for instance, notes that cartoons exhibit "a deceptively naïve – sometimes even banal – exterior that is merely a camouflage for ideas and opinions that are not necessarily the least flippant" (1972, 10). While the underlying motives or intentions behind a cartoon may not be simple, it is a common trait (or even demand) of the genre that the depiction of the subject matter be relatively simplistic and straightforward. This simplicity acts as a strategic masking of motive. Editorial cartoons thus often rely on playfulness, references to popular imagery as well as deliberate displays of vulgarity, irony and sarcasm. They depict and reimagine imaginary scenes that both summarize and satirize a political figure or issue, and in doing so "their recontextualization of events evokes reference points in a way that a photo cannot" (Walker, 2003, 19).

Indeed, the fact that these images are drawn or painted allows for a series of depiction strategies that are not available to other visual genres normally connected with journalistic and political contexts. As previously noted, one of the main devices of editorial cartoons is the use of caricature. Political cartoons exploit recognition of political brands (be they personal or party brands) by focusing on the most obvious and grotesque traits of their target. Barshay describes this operation as distortion through incongruity (1977, 58). The image presented through a political cartoon is not only distorted, but presents clear incongruities to reality as well as audience expectations. In other words, editorial cartoons employ different levels of hyperbole in order to create this distortion.

As part of a larger visual culture cartoons employ a range of classic rhetorical figures such as metaphor, analogy, synecdoche, allusion and puns (Grofman, 1989, 170). These tropes play on a mix of text and image, as one often finds explanatory texts in editorial cartoons that spell out the intended meaning of a given visual metaphor. This form is important for utilized visual metaphors to establish a clear link between the satirical depiction and its subject. In order to "get it" readers must unpack a set of condensed meanings within a single image in the way intended by the cartoonist. Given questions of polysemy and media literacy in general this can become problematic. However, the use of common rhetorical tropes means that cartoons can formally tap into culturally familiar imagery and may even come to shape it. An example of this is the often-used images of the GOP elephant and the Democratic donkey, both of which originally hail from an editorial cartoon (Geipel, 1972, 29). Such relations between the form and function are particularly interesting in the context of this volume, as they indicate how the complexities of climate change can be effectively framed and condensed visually.

7.3 Categories of Climate Change Arguments in Editorial Cartoons

Launching an inquiry into how both the climate change debate and climate change itself is represented visually and argumentatively in editorial cartoons requires not only close analysis, but also a broader scrutiny of the genre itself. This means that while we will still be working with cartoons within an overall hermeneutic critical framework in later parts of this article, we initially began our inquiry by assembling a larger corpus of texts. In doing so, we decided to use Google algorithms to find American editorial cartoons that in some way depict climate change. This national focus allowed us to better direct the search for material. However, as American news and popular culture is broadly disseminated globally (no less so because of the internet), we consider the delimitation of nationality imposed on the material to still have relevance to other national contexts.

In working with the Google algorithm, we used searches based on winners of the Pulitzer Prize for Editorial Cartooning from the last twenty years as a starting point.

Previous winners – such as Clay Bennett (2002), David Horsey (2003), Nick Anderson (2005), Mike Luckovich (2006), Michael Ramirez (2008), and Steve Zack (2013) – have made several cartoons about climate change. The Google algorithm provides suggestions for similar images based on linguistic, visual, and thematic parities. This means that the images collected through this function of searches stayed roughly within the parameters of our original inquiry. In addition to this we chose to supplement the initial search with a purposefully broad search using only the words "editorial cartoon" and "climate". These searches combined created a corpus of well over four hundred editorial cartoons spanning a twenty-year period. After removing all cartoons from other English-speaking countries (mainly Australia and Canada), the final corpus consisted of 398 cartoons, all of which in some way depict either climate change itself or positions in the overall debate.

In the process of collecting material for the corpus, it was clear that there are several ways to sort and categorize the large number of cartoons. We chose to conduct this process inductively in order to ensure that pre-made categories would not influence the initial gathering and brief analytical work with the texts in the corpus. After the corpus was fully collected, we first sorted the collected cartoons in categories of visual themes such as caricatures of climate change deniers and cartoons containing polar bears. Based on Miller's definition of genre and the genre description above we reworked these looser categories based on the notion that editorial cartoons contain visual argumentation. A new set of categories was constructed based on different arguments, relating to climate change, that were repeatedly presented in the texts of the corpus by means of the generic resources inherent to the genre.

Category:	Number of items in corpus:	Argument:
Consequences	170	Presents the consequences of not acting to stop climate change
Capitalism	34	Criticizes the role of the capitalist system in relation to climate change
Ridiculing the Deniers	101	Ridicules the arguments of denial and the people who use them
Against Climate Activism	30	Ridicules climate science, environmentalists, and left-wing politicians
Context specific	58	Depicts climate change topics in relation to specific (short lived) political contexts
Other	5	

Fig. 1: Categories of arguments in cartoons on climate change.

The categories (see figure 1) present broad but distinct arguments. Each category thus includes a variety in themes and expressions. However, every member of a category

contains the same specific argumentative function. These functions may relate to different means of satirical argumentation as governed by the overall social motive of the genre. Thus, we argue that there is a clear difference in the specific arguments put forth. However, these differences do not constitute subgenres, as they are unique to individual cartoons. The first category, "Consequences", contains different depictions of either short term or long-term climate futures. Often cartoons in this category will focus on how dire consequences such as drought, sea level rise, and hurricanes may affect people's everyday lives. The second category, "Capitalism", is focused on criticism of a larger capitalist system that fuels climate change. The cartoons in this category often feature caricatures that stand in for economic, corporate or other systemic actors. Linking to this, the third category is named "Ridiculing the Deniers". This category focusses on ridiculing the arguments of denial and those who propagate them.

Not all editorial cartoons, however, champion climate action. A smaller group of cartoons in the corpus falls under the fourth category "Against Climate Activism". These cartoons question the validity of climate science and poke fun at the actions of environmentalists and left-wing politicians.

The last two categories collect cartoons that do not fit into the other categories. The "Context Specific" category collects cartoons that may have widely different arguments, but relate to very specific and at times short-lived contexts. An example of this is the Papal Encyclical on Climate Change from 2015, which spawned numerous cartoons at the time. Other examples are cartoons about specific events at UN Climate Summits. While the themes and arguments put forth differ, all of the cartoons in this category illustrate how editorial cartoons may use particular contexts as subject matter. The category "Other", which contains only five cartoons, is made up of outliers that did not fit into any of the other categories. The cartoons in this category do not present as clearly defined arguments compared to the rest of the corpus. The following sections will feature analyses of selected examples from these categories in order to address how different arguments about climate change appear in satirical cartooning.

7.4 Consequences

The climate debate abounds with more or less apocalyptic descriptions of different future scenarios (Nielsen, 2017, 87). This too is a theme in many editorial cartoons. Common imagery used for this are scorched human remains or images of flooding, but the genre also provides more original and ingenious ways of depicting climate change catastrophe. An example of this is a 2013 cartoon by Clay Bennett for the *Chattanooga Times Free Press*, in which Earth is depicted as a round charcoal grill floating through space. On one of the wheels of this Earth-grill the words "climate change" are where the brand of the producer would normally be (Bennett, 2013). This drawing

provides a simple yet effective visual metaphor for climate change, implicitly arguing that by not tackling climate change, we are basically cooking ourselves. Visually the comic creates a specific lens or framing. The Earth-grill is in focus, vibrant in color as well as placed in the center of the image, whereas the moon and the cosmos are muted and blurry. There is no question which elements in the cartoon should be attributed importance and meaning. Cartoons like Bennett's do not contain a visualized target for satire. Instead, it directs its argument to the audience by means of easily understood hyperbole. In doing so, the cartoon encourages people to contemplate possible climate futures (that are perhaps more realistic, but nonetheless frightening).

Another way of achieving such reflections by the audience is to make the consequences of climate change remain implicit. In a cartoon from 2014 (syndicated through Tribune Media) Drew Sheneman depicts not climate change itself, but rather one of the commonly used symbols of global warming – the penguin. The cartoon presents a waddle of penguins standing on an ice floe, one penguin placed above the rest. With its one wing raised this penguin proclaims, "The ice is melting. Sea level rise is inevitable and the humans refuse to act! Prepare yourselves, the age of the penguin begins now" (Sheneman, 2014). Sheneman draws on the association between arctic animals, such as penguins and polar bears, and climate change. However, by letting the penguins themselves note the inaction of the human race, the cartoon relocates the penguins from a role of climate victims to that of future conquerors. The pose of the lead penguin (one wing raised and beak held high) mirrors a classic pose often associated with revolutionary figures and political firebrands. The cartoon thus draws on the incongruity between the typical image of penguins as cute and clumsy animals and the anthropomorphized penguins, here espousing an animal uprising – much of the humor lies in this playful discrepancy. However, this incongruity may provide a point of departure for thinking about or discussing actual human inaction on climate change.

Alex Gregory draws a scene in a 2016 cartoon for *The New Yorker* which employs a very different satiric strategy. The drawing contains a father standing on a veranda by the sea with his arm around the shoulder of his young son. This image depicts the idyllic and generic scene of a "father and son moment". This generic scene does not in itself have any specific connotations to climate change. However, the text at the bottom of the cartoon, relaying the father's words, reads "someday, son, all of this will be yours – and under water" (Gregory, 2016). By adding this text Gregory transforms the scene from an everyday gesture to a social commentary that uses a central trope from the overall climate change debate – that of the fate of future generations. The image itself is simple and eschews the type of visual hyperbole that is common to editorial cartoons. Combined with the dash in the text, which relays the pause before the topic of the cartoon is actually revealed to be climate change, the stylistic simplicity makes the implicit argument subtle yet evocative. Indeed, the fact that the punchline about climate change is presented as almost an afterthought that somewhat negates

the father's previous statement, provides the kind of satirical incongruity that presents an implicit argument about climate change and its consequences.

Any genre will exhibit an interrelated play between genre norms and individual variations (Auken 2018, 17-18), and this too is true for editorial cartoons. The depictions of consequences of climate change vary greatly, but utilize strategies that are common to the genre, such as visual metaphor, incongruent figures, and constructing jokes based on interplay between text and image. Another common trait of these cartoons – as well as this category in general – is the lack of a specified satirical target. The cartoons do not feature any named person, brand or political operative. Instead, as Lamb explains the humor is directed at larger inaction and in the end toward the reader herself (2004, 23). Therefore, the depictions should be seen in light of the generic motive of questioning the status quo. By deliberately playing on the absurdity of the depicted climate change scenarios, editorial cartoons encourage the reader to contemplate both the larger issue and her role in it. Especially cartoons such as those by Bennett and Sheneman hint at a specific agency involved in the issue – a grill implies a cook and the penguins are mobilizing due to human inaction. Gregory's cartoon, on the other hand, works as a commentary on the inevitability of climate change impact. While it does not provide clear hints of agency, its subtle humor indicates that neither should it be read as entirely fatalistic.

The cartoons that focus on future impact often find their material in widely circulated ideas or imagery of climate change in public culture. There is nothing original in the metaphor of humans "cooking" the Earth, penguins as mascots for climate change, or a scene involving a "father and son moment". Indeed, these are all part of a cultural stock of metaphors, images and plots that are readily available to both artists and audiences within a Western cultural context. While such popular imagery is common in editorial cartoons, here it becomes central to the depiction. The complexity of climate change means that the issue becomes hard to delineate in a single image. Thus, the cartoonist needs common visual tropes in order to reduce this complexity as well as to construct the punchline of the joke. There are a few exceptions to this. For instance, Matt Wuerker at *Politico* used the Trump governments axing of environmental regulations in 2017 as a context for satirically depicting the consequences of climate change and air pollution (Wuerker, 2017). However, they are few and far between. The consequences of climate change are so far-reaching and complex that it becomes hard to delineate specific events or persons, when tackling the overall issue. In framing the consequences of climate change, editorial cartoons thus tend to seek absurdity in the depictions of the scenarios themselves, providing another more subtle way of pointing out shared environmental transgressions.

7.5 Capitalism

Climate change is by nature a systemic issue that is closely tied to the ways in which human industrial societies have been organized. This means that the very status quo of the social system is one of complicity or at least responsibility in relation to the issue, making it ripe for the type of criticism or ridicule that editorial cartoons are known for as a genre. Although cartoons in the category "Capitalism" may still portray the consequences of climate change, their focus is not on specific scenarios, but rather on assigning blame by highlighting the capitalist system and its actors.
In a cartoon from 2011 (syndicated through Hearst Newspapers) David Horsey creates an over the top scenery of climate change. The cartoon depicts a large river, which is actually a flood, as it is seen submerging roads, a farmhouse, and perplexed livestock. In the background, a large tornado looms, connecting to dark skies above. In the foreground, two men of different stature float down-water. The first man is thin and floats in a life preserver, while casting a frightened look over his shoulder at the tornado that is blowing at his hair and tie. The word "Government" is written on the life preserver. The other man is sitting comfortably and smiling in a boat, reading a stack of papers, whilst raising a glass of champagne in one hand. On the side of the boat the words "Energy Industry" is written. The man symbolizing the government exclaims, "Killer tornadoes! Epic floods! Rising Sea Levels! You told me climate change wasn't real!", to which this the man symbolizing the energy industry replies, "Senator, the only thing that is really real: my epic, rising profit margin!" (Horsey, 2011).

A lot is happening in Horsey's cartoon. However, the different elements combine to construct an argument that not only presents consequences of climate change, but also places responsibility for these squarely on industry greed, as well as on industry influence over the political system. The claim that the cartoon presents is that the energy industry (i.e. the fossil fuel industry) has hoodwinked the American government by playing down the consequences of climate change in order to perpetuate a business-as-usual approach. The energy industry is thus more concerned with profit than with the well-being of the country, whereas the government is hapless and naïve. The posture and facial expressions of the two metaphorical figures in the image hint at this. That the energy industry portrayed in the comic should actually be read as the fossil fuel industry is further indicated by Horsey's choice of color scheme, which is mainly kept in shades of brown and grey. The sky is thus dark and ominous, resembling the smog of smoke stacks as much as mere clouds. The grass is a pale shade of golden brown, giving it a wilted hue. Finally, the water on which the men are floating is grey-brown, creating associations with pollution. Neither the claim nor its visual presentation is subtle. Instead, Horsey's cartoon brings to mind the many descriptions of editorial cartoons as an attack genre or weaponized satire.

Mike Luckovich likewise skewers the energy industry in a 2006 cartoon for the *Atlantic Journal Constitution*, albeit less explicitly than Horsey. The drawing is in black and white, and shows two polar bears treading water with just their necks above the

water line. Beneath them fish are swimming, and in the far-off distance a third polar bear is looking at them dejectedly, whilst sitting on a chunk of ice. The first (leftmost) polar bear shows an affable expression as it says to its companion, "As a spokesman for Big Oil, I'm still not convinced that this is related to global warming" (Luckovich, 2006). The other polar bear does not answer, but simply looks bewildered. Luckovich establishes a satirical incongruity in the combination of text and image. The image itself shows the polar bear – a prominent figure in climate change discourse – but does not present a clear argument or point. Instead, the punchline is provided by the speech balloon. The puzzled and exasperated expression of the other polar bear connects the two modalities into a punchline about the fervent denial of climate change even in the face of overwhelming evidence. It suggests the incongruity of the statement with reality, mirroring the type of reaction from readers that the cartoon is clearly aiming at.

An editorial cartoon like this might also fit under the category of "Climate Change Deniers". However, the understanding needed to "get" the joke or argument relies on the identification of the polar being a Big Oil spokesperson. This can indirectly be read as a point about the average climate denier being able to change, when presented with overwhelming evidence, whereas agents of capitalism do not have the incentive to do this. Thus, Luckovich's cartoon employs an incongruous depiction of already established climate imagery, presenting an indictment of industry interests rather than of climate change deniers in general.

A common trait of cartoons in this category is the specific criticism of capitalist interests. However, the charges levelled rarely point out specific people, except for a few politicians that aid these interests, but instead use metaphorical representations of the fossil fuel industry as a unified monolithic entity or actor. This amalgamation and embodiment of companies and lobby groups into particular figures is a rhetorical strategy often seen in editorial cartoons, as it allows cartoonists to attack a diverse group of culprits (or the very system itself) through a single image.

7.6 Ridiculing the Deniers

The cartoons in this category overwhelmingly ridicule those who do *not* believe in manmade climate change. The argument here is often located in the absurdity of the politicians' or everyman's denial in the face of evidence. The humor thus relies on an implicit understanding between the reader and the cartoon. As described earlier, editorial cartoons are examples of quotidian rhetoric. They function not to convert people, but rather partly shape or perpetuate social, political and cultural attitudes, creating common ground with the reader.

In a 2012 cartoon for the *Los Angeles Times*, David Horsey presents a typical theme from this category. A farmer placed by his field of dying corn crops in a desolate rural wasteland under orange colored skies. Next to him is an ostrich with its head in

the sand. The farmer is portrayed as an example of someone who previously denied climate changes, voted republican, but is beginning to realize the facts. Drought has killed his crops, and now even people like him have to feel convinced by the reality of global warming. The ostrich represents the Republican Party who continues to ignore the reality, and even tries to withhold knowledge from the farmer (Horsey, 2012).

The ostrich with its head buried in the ground is an often-used visual trope in American editorial cartoons, but it has a different function than the previously mentioned animal stand-ins. Whereas the elephant and the donkey have come to represent the Republican and Democratic parties respectively, the ostrich can portray either side as well as specific political figures. Actual ostriches do not bury their heads in the ground. However, the concept is publically accepted as a metaphor for denial, and can therefore serve as a strategic depiction within the genre. The ostrich is yet another example of distortion through incongruity. As a satirical cartoon, Horsey's drawing works out of context exactly because of the absurd representation of an ostrich arguing against climate change. However, as opposed to the cartoons in the "Consequences" category, cartoons in this category draw more on specific historical, political, and material contexts. First and foremost, the reader must agree with the artist that climate change is real and denial is ridiculous or even dangerous. However, the context of Horsey's cartoon stretches beyond political orientation, as it actually depicts the big American drought of 2012. In addition to its severity, the drought of 2012 was characterized by a rather slow recognition of the calamity by political actors. Notably, the grains flourished in the early heat, but ended up diminished by more than 25% in the US in general (Rippey, 2015). Viewing the cartoon in this specific context imbues the depicted farmer and his corn with added meanings. In addition, the ostrich metaphor becomes a satirical (if still scathing) comment on the initial disregard of the drought from politicians and farmers alike. By combining the stock metaphor of the ostrich (representing the GOP) and the more context-specific farmer at this moment in time, the cartoon ridicules both of them, but also creates common political ground between the cartoon and liberal readers.

Horsey's cartoon is an example of the way in which American editorial cartoons often operate on two levels. On one hand, they must be relatable and funny for larger uninitiated audience. This becomes more important with the rise of online circulation of cartoons. On the other hand, they usually utilize the specific context of the news outlet, the current political situation, and specific ecological condition, as is the case of these particular cartoons.

The importance of the context of newspaper and political orientation is always at play, also in a 2010 cartoon by Clay Bennet from *Chattanooga Times Free Press*. This cartoon utilizes an often-seen caricature of the average person arguing against climate change through a limited logic of personal experience as opposed to scientific knowledge. A man pauses while shoveling snow and remarks, "So, if this global warming hysteria is true, then what am I shoveling?" Underneath, it says, "don't answer that" (Bennett, 2010). This cartoon is specifically interesting for our analysis in that it

only presents itself as ridiculing the climate change denier through the *context*. The written text outside of the frame shows only what is necessary to understand the joke, but in the cartoon itself, almost nothing denotes that this is not ridiculing the climate activists themselves. If the reader does not know the artist, the news outlet, and their political positions, the drawing could be taken as making the opposite argument of what is intended.

When examining how much of the joke and its implicit argument is founded in prior knowledge, and how much is located in the actual drawing, one need only look to the specific features of the man. Depicting the climate change denier with an overtly casual stature, a smirky smile, and one eyebrow raised, frames him as a sarcastic and annoying figure. This is the eyes of someone being extremely condescending, prompting readers to view him as an unsympathetic person. The text in the speech balloon in itself denotes nothing but a classical argument, put in a slightly sarcastic manner, but seen in relation to the man's eyes, the cartoon reveals where its sympathies lie. By letting someone unsympathetic sarcastically deliver an argument, the cartoon turns the tables and ridicules exactly this type of argument. This type of ridicule, however, only works by eliciting casual agreement and cooperation from the reader in decoding the satirical message.

In the case of the "Ridiculing the Deniers" category, the cartoons of the corpus illustrate that editorial cartoons are, indeed, an attack genre, relentlessly exposing and making fun of their target. The kind of ridicule put forth here is directed against both the arguments of climate change denial and deniers as a group. However, this seems to depend on constructing visual jokes that connects to already held beliefs in certain readers (to the exclusion of others). In the age of internet, it becomes vital to remember that these types of cartoons usually also have a political, historical and geographical context that is essential fully understand the argument – and to get the joke.

7.6.1 Against Climate Activism

In many respects, this last category is the same as the above one, but inversely so. Here, the argument about the climate change deniers turns against climate change activists, left wing politicians, and climate scientists. The first example by Rick McKee in *The Augusta Chronicle* (2015) – a conservative newspaper from Georgia – works with the same motifs as other cartoons (from climate change proponents) such as the penguin and the melting ice caps. In the cartoon, a penguin is staring at a frozen climate activist with a sign that says, "Help stop Antarctica's shrinking ice" (McKee, 2015). With his long beard and desperate eyes, the frozen activist is the marked target of ridicule, and the *irony* is guiding the argument – the ice is not really shrinking, but quite the opposite. As in the above category, there is a negotiation between the general joke and the context specificity. On one hand, the humorous argument lies in

the ironic discrepancy of the ridiculous frozen activist and the staring (and thriving) penguin. On the other hand, there is a specific scientific context for this ridiculing. In November of the same year, NASA published a study, claiming that the Antarctic ice sheet is actually growing in size (Viñas, 2015). The study was (and still is) widely contested, as climate scientists disagree with its methods as well as its conclusion (Howard, 2015).

Based on McKees representation of the issue in the cartoon, the contestation and larger technical debate about the NASA study seem to be of little interest to the general reader of *The Augusta Chronicle*. In the companion article to the cartoon, the newspaper never put forward the news as a dispute per se, but rather as further evidence that climate scientists are wrong and that president Obama was jeopardizing the American economy with his climate concerns. Even though the presented joke of the frozen activist does work by itself to this day, it does require a specific social context to have all of its layers of meaning made explicit.

In addition to ridiculing climate activist, another common argument in this category has to do with the (possible) corruptness of climate science. The argument here is often that scientists manufacture scientific results in order to get more money. An example of this is a cartoon by Branco also from 2015 (syndicated through the conservative media company Liberty alliance), in which Obama (with his eyes closed) presents a large bag of money to a scientist. The scientist's eyes are replaced with dollar signs behind his glasses. On his arm it says, "the 95%" (Branco, 2015). The argument is clearly that the majority of scientists are greedy and corrupt, and yet again Obama is a fool for giving money to them.

Many of the same points can be made as in the above analysis about how this argument functions and is presented. However, one specific questions spring to mind, regarding Branco's cartoon. What does the form and style of the drawing matter to the function and the aesthetics of the cartoon? The American editorial cartoon as a genre utilizes standardized visual metaphors, underlining arguments through the combination of text and image. There is, however, still room left for style and form to contribute to the function as well as the general aesthetic of the cartoons, extending the cultural stock of images at their disposal. This is also evident in some of the previously mentioned cartoons in other categories.

In this particular cartoon, the eyes play an important role again. Obama closes his eyes, ignoring reality (i.e. that climate change is a hoax), and the scientist's eyes are pure dollar signs. Which is worse – the greedy scientist or the president giving the incentive? The cartoon presents both as corrupt and evil, but the scientist is especially interesting to our particular enquiry. The argument of "the 95%" relies on a democratic idea. If 95% of climate scientists, stemming from widely different disciplines, cultures and countries, agree, it by definition becomes hard to accuse the entire group of corruption – if nothing else then because of the sheer complexity of backgrounds. Branco, in his cartoon, turns the argument upside down by creating a single scientist figure as a sort of metonymical replacement for all the climate change proponents.

Metonymy is, of course, a classical satirical figure, which is also seen in other cartoon representations (for instance of industry actors). However, Branco's use of the figure underpins the argument or indictment against the majority, put forth by the cartoon. One person can easily be corrupted, and he can be portrayed as a specific caricature with the greedy eyes, bared teeth, and a droopy panting tongue. The text on the scientist's arm is the only thing telling readers that he actually represents (almost) all of climate science as a whole. However, the text also designates the figure as not just a representative of climate scientists, but rather as an embodiment of the majority that Branco indicts with fraudulent behavior. By using this caricatured metonymical figure, the cartoon works around the argumentative problem of refutations and reinforces the political positions of both the cartoonist and the reader.

7.7 Satirical Functions and Climate Change

By now, it should be clear that there is no one way of depicting or arguing about climate change. Instead, our corpus and the chosen examples illustrate a plethora of ways, in which climate change may be presented. In this chapter, we have distilled the overall variety into a series of main categories that collect differing visual representations of climate change within an argumentative perspective. It is important to note here that context figures as a main element across the different categories. This applies both to political and social contexts as well as to the media context (online or a physical newspaper), in which the cartoon itself is encountered. In this sense, editorial cartoons as a rhetorical genre differs from more literary forms of cartoons such as the comic strip, which relies more on formally aesthetic expressions rather than social context. Groensteen, for instance, notes that single image cartoons work not through aesthetic narrativization, rhythm, and payoff, but rather through the invocation of a specific story or outside context (2013, 23).

Similar divisions between the aesthetic and the rhetorical exist within genre theory, as rhetorical genres often seem rooted in function rather than literary or aesthetic sensibility (Devitt, 2000, 698; see also Devitt, 2004). Despite the possible contextual constraints of editorial cartoons, differences in types of contexts do appear in relation to the issue of climate change. Whereas many cartoons relate to specific contexts such as new scientific studies or concrete drought conditions, other cartoons do not necessarily link their jokes to any specific event.[1] Instead, they use the context of the overall debate as a point of departure by using already familiar imagery as the basis for metaphors or satirical hyperbole. Furthermore, the physical media context

1 We purposefully chose to forego a separate analysis of the Context-Specific category, as this category is too diverse in arguments and contexts to readily present a unified analysis. However, a lot of what can be said about this with regard to context has been covered elsewhere.

of a given cartoon is important, because the political orientation of the newspaper, in which it appears, must be taken into account. As political polarization is a condition connected to media outlets and circulation, the political orientation of a given newspaper or online news outlet dictates certain constraints that cannot but influence the tone of satirical cartoons and by extension how they represent the tone of the climate change debate. In relation to depictions of climate change our analyses illustrate how cartoonists attune their representation and style of jokes to their audience, accommodating overall social and political attitudes that one may assume is shared among the readers of that particular newspaper. Incorporating established attitudes, such as dismissals of climate science or suspicions toward the capitalist system, may help strengthen the argument of a cartoon as well as play a part in constructing the joke itself. For example, it would be easy to shrug at Gregory's father and son scene from *The New Yorker*, if one did not already believe that climate change is happening.

However, this also reveals the limits of the genre. We have argued earlier that editorial cartoons must be viewed as quotidian rhetoric, in part because their material impact remains somewhat limited. Editorial cartoons thus come to embody a middle position, in which they are closely related to political culture in society, but function as a type of everyday rhetoric that contribute to the shaping of attitudes rather than sparking direct action. In relation to the climate change debate this certainly seems to be the case. The limitation of having a single image to present means that editorial cartoons may be able to critique systemic issues, specific actors or simply human inaction, but they cannot provide suggestions for the solutions, ideals or scenarios needed to move forward. Looking to the examples from the analyses, it is striking that most if not all the cartoons in reality only address people, who already agree with the cartoonist on how to perceive the climate crisis. The functional focus is on reinforcing existing worldviews – be they concerned over or skeptical of man-made climate change – rather than shaping new ones. While we do not deny that some people may be swayed by the argument of a cartoon, our examination of the larger corpus of editorial cartoons on climate change shows a common tendency towards employing shared identifications with pre-existing positions. This, in turn, makes sense when looking at the high degree of polarization in the American climate change debate. As described earlier, the social functions of humor are often governed by implicit social humor regimes, dictating who can make fun of whom, and how this can be done. This means that polarization in the overall debate becomes a specific constraint that must at least partially be acknowledged, when satirizing the climate change issue.

Looking to Amy Devitt's earlier chapter in this book, the treatment of climate change as both an issue and a specific debate by editorial cartoons can be described as "generic mindfulness". Cartoonists choose to use the genre as a means to reflect or reinforce desired worldviews or attitudes. However, the focus on reinforcement also reflects the quotidian nature of this type of generic rhetoric. Editorial cartoons have interventional aspirations, but as a genre, it may be best to view them as motivational rather than interventional from an activist perspective. This does not mean that edi-

torial cartoons are not contributing to the climate change issue. In fact, as Walker points out, editorial cartoons become cultural repositories that reflect the different positions, arguments, and schisms in the overall debate. While it is possible to question the efficacy of editorial cartoons based on their ability to create agency for the reader, one must acknowledge their historical function of chronicling the developments of how society deals with and communicates about climate change as an issue.

Finally, the editorial cartoon genre also represents an important visual addition to the cultural repertoire that shapes how climate change is and can be represented. Frederick Buell (2010) has argued that even though people face environmental constraints as part of everyday life, these have not necessarily become salient for the broader public – especially when looking at the climate change debate. Julie Doyle (2011) levels a similar critique, and wonders why human beings have featured so little in the last two decades of climate change communication compared to graphs, maps, animals, and melting glaciers. Questioning the logic of this framing, Doyle argues that it has created a distance to the issue for many laypeople (32). However, as pointed out in the earlier analyses, editorial cartoons do not simply make use of cultural stock imagery of climate change, but rather extends it or turns it on its head. Indeed, this operation seems to be prerequisite for how the genre deals with such issues. The scenarios found in editorial cartoons gain rhetorical presence by employing absurdity to familiar representations, allowing for more accessible and compelling visualizations than can readily be achieved by still photography or computer-generated graphs. Furthermore, editorial cartoons largely answer Doyle's indictment by actually showing human beings in depictions of climate change. Although many human figures in the corpus are actually functioning amalgams of groups, this does not detract from the fact that human beings are conspicuously present in relation to the issue – much more so than in other prominent genres. Even the animals featured in editorial cartoons are mostly anthropomorphized in order to deliver an essentially human reaction or argument.

In a sense, one could argue that a prominent polemical genre, which is often how satirical cartoons have been described, is an odd or perhaps even counter-productive way to address climate change. By its very nature as satire and limited to only a single frame, a cartoon will always be unable to address the complexities inherent in this vast issue. As our analyses show, this is true for individual editorial cartoons. However, when looking beyond single texts and instead to the repeated addressing of climate change in the genre, a different pattern emerges. Indeed, the steady stream of cartoon depictions of climate change related issues form a mosaic – beyond any one cartoon – which summarizes a societal problem and its ensuing debates through a range of generic strategies, highlighting different positions, arguments, causalities, images and tropes. The image of the larger mosaic only becomes all the more pertinent to the climate change debate, when seen in relation to the circulation of editorial cartoons into the everyday practices (and thus attitudes) of readers. Scholars of editorial cartoons are quick to emphasize that editorial cartoons are more than just visual

gags, and rightly so. On the other hand, perhaps the folly of humankind – the very reason for the current climate crisis – at times warrants an unflinchingly critical look and a whip of ridicule.

References

Auken, S. (2018). Understanding genre. *Journal of Zhejiang International Studies University, 2*, 14–27. Bal, A.S., Pitt, L., Berthon, P., & DesAutels, P. (2009). Caricatures, cartoons, spoofs and satires: political brands as butts. *Journal of Public Affairs, 9*, 229–237. doi:10.1002/pa.334.

Barshay, R. (1977). Black humour in the modern cartoon. In A.J. Chapman & H.C. Foot (Eds.),*It's a funny thing, humour* (57–59). Oxford: Pergamon Press.

Baumgartner, J.C. (2008). Editorial cartoons 2.0: The effects of digital political satire on presidential candidate evaluations. *Presidential Studies Quarterly, 38*(Spring), 735–758.

Billig, M. (2005). *Laughter and ridicule: Towards a social critique of humour*. London: Sage Publication.

Brummett, B. (1991). *Rhetorical dimensions of popular culture*. Tuscaloosa, AL: University of Alabama Press.

Buell, F. (2010). A short history of environmental apocalypse. In S. Skrimshire (Ed.), *Future ethics: Climate change and apocalyptic imagination* (13–36). London: Continuum.

Burke, K. (1969). *A grammar of motives*. Berkeley: University of California Press.

Day, A. (2011). *Satire and dissent: Interventions in contemporary political debate*. Bloomington, IN: Indiana University Press.

Devitt, A. (2000). Integrating rhetorical and literary theories of genre. *College English, 6*, 698–718. doi:10.2307/379009.

Devitt, A. (2004). *Writing genres*. Carbondale: Southern Illinois University Press.

Doyle, J. (2011). *Mediating climate change*. Surrey: Ashgate.

Geipel, J. (1972). *The Cartoon: A short history of graphic comedy and satire*. London: David and Charles Publishers.

Grofman, B. (1989). Richard Nixon as Pinocchio, Richard II, and Santa Claus: The use of allusion in political satire. *Journal of Politics, 51*(1), 165–173. doi:10.2307/2131614.

Freadman, A. (2002). Uptake. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (39–53). Cresskill: Hampton Press.

Groensteen, T. (2013). *Comics and narration* (A. Miller, Trans.). Jackson: University Press of Mississippi.

Harrison, R.P. (1981). *The cartoon: Communication to the quick*. Beverly Hills, CA: Sage Publication.

Howard, C.H. (2015). What Antarctica's incredible "growing" icepack really means. *National Geographic*. Retrieved from https://news.nationalgeographic.com/2015/11/151103-antarctic-ice-growing-shrinking-glaciers-climate-change/.

Jamieson, K.M. (1975). Antecedent genre as rhetorical constraint. *Quarterly Journal of Speech*, *61*(4), 406–415. doi:10.1080/00335637509383303.

Keane, D. (2008). Cartoon violence and freedom of expression. *Human Rights Quarterly*, *30*(4), 845–875.

Kjeldsen, J. (2015). The study of visual and multimodal argumentation. *Argumentation*, *29*, 115–132. doi:10.1007/s10503-015-9348-4.

Kuipers, G. (2011). The politics of humour in the public sphere: Cartoons, power and modernity in the first transnational humour scandal. *European Journal of Cultural Studies*, *14*, 63–80. doi:10.1177/13767549410370072.

Lamb, C. (2004). *Drawn to extremes: The use and abuse of editorial cartoons*. New York, NY: Columbia University Press.

Miller, C. (1984). Genre as social action. *Quarterly Journal of Speech*, *70*, 151–167. doi:10.1080/00335638409383686.

Miller, C. (1994). Rhetorical community: The cultural basis of genre. In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (67–78). London: Taylor & Francis.

Nielsen, E.B. (2017). Climate crisis made manifest: The shift from a topos of *time* to a topos of *place*. In D.G. Ross (Ed.), *Topic-driven environmental rhetoric* (87–105). New York, NY: Routledge.

Pett, J. (2012, March 18). Joel Pett: The cartoon seen 'round the world. *Lexington Herald Leader*. Retrieved from http://www.kentucky.com/opinion/op-ed/article44162106.html.

Plug, H.J. (2013). Maneuvering strategically in political cartoons: Transforming visualizations of metaphor. In H. Van Belle, P. Gillearts, B. Van Corp, D. Van De Mieroop & K. Rutten (Eds.), *Verbal and visual rhetoric in a media world* (429–439). Amsterdam: Leiden University Press.

Powell, C. (1977). Humour as a form of social Control: A deviance approach. In A.J. Chapman & H.C. Foot (Eds.), *It's a funny thing, humour* (53–55). Oxford: Pergamon Press.

Rippey, B.R. (2015). The U.S. drought of 2012. *Weather and Climate Extremes*, *10*, 57–64. doi:10.1016/j.wace.2015.10.004.

Spinuzzi, C., & Zachry, M. (2000). Genre ecologies: An open-system approach to understanding and constructing documentation. *ACM Journal of Computer Documentation, 24*(3), 169–181.

Spoel, P., Goforth, D., Cheu, H., & Pearson, D. (2008). Public communication of climate change science: Engaging citizens through apocalyptic narrative explanation. *Technical Communication Quarterly, 18*(1), 49–81. doi:10.1080/10572250802437382.

Stahl, W.A. (2011). From peak oil to apocalypse: Cultural myths and the public understanding of scientific models. In R.G. Howard (Ed.), *Network apocalypse: Visions of the end in an age of Internet media* (25–43). Sheffield: Sheffield Phoenix Press.

Swales, J.M. (1990). *Genre analysis: English in academic and research settings*. Cambridge: Cambridge University Press.

Viñas, M. (2015, October 30). NASA Study: Mass gains of Antarctic ice sheet greater than losses. *NASA*. Retrieved from www.nasa.gov/feature/goddard/nasa-study-mass-gains-of-antarctic-ice-sheet-greater-than-losses.

Walker, R. (2003). Political cartoons: Now you see them! *Canadian Parliamentary Review,* (Spring), 16–21.

Cartoons

Bennett, C. (2010, February 12). Global warming. *Chattanooga Times Free Press*. Retrieved from http://www.timesfreepress.com/news/opinion/cartoons/story/2010/feb/13/global-warming/5602/.

Bennett, C. (2013, August 23). Climate change. *Chattanooga Times Free Press*. Retrieved from http://www.timesfreepress.com/news/opinion/cartoons/story/2013/aug/23/climate-change/116801/.

Branco, A.F. (2015, January 28). Building consensus. *Liberty Alliance*. Retrieved from https://comicallyincorrect.com/settled-science/.

Gregory, A. (2016, August 22). Someday, son, this will all be yours – and underwater. *The New Yorker*. Retrieved from https://cartoonbank.com.

Horsey, D. (2011, June 16). Inaction and denial bring us the whirlwind of climate change. *Seattle PI*. Retrieved from https://blog.seattlepi.com/davidhorsey/2011/06/16/inaction-and-denial-bring-us-the-whirlwind-of-climate-change/.

Horsey, D. (2012, August 2). This drought makes me wonder. *Los Angeles Times*. Retrieved from http://www.latimes.com/opinion/topoftheticket/la-na-tt-climate-change-skeptic-20120802-story.html.

Luckovich, M. (2006, May 25). As a spokesman for big oil, I'm still not convinced this is related to global warming. *Atlantic Journal Constitution*. Retrieved from http://www.gocomics.com/mikeluckovich/2006/5/25.

McKee, R. (2015, November 5). Help stop Antarctica's shrinking ice. *The Augusta Chronicle*. Retrieved from http://chronicle.augusta.com/opinion-cartoons/2015-11-05/rick-mckee-editorial-cartoon

Pett, J. (2009, December 14). Climate Summit. *USA Today*. Retrieved from http://www.kentucky.com/opinion/op-ed/article44162106.html.

Sheneman, D. (2014, May 27). The age of the penguin begins now. *The Newark Star-Ledger*. Retrieved from http://www.gocomics.com/drewsheneman/2014/05/27.

Wueker, M. (2017, February 2). Future history. *Politico*. Retrieved from https://www.politico.com/gallery/2017/02/february-2017-002401?slide=7.

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8 "How to Turn Accumulated Knowledge into Action": Uptake, Public Petitions, and the Climate Change Debate

Abstract: This chapter focuses on how the impasse between climate change evidence and the public's acceptance of and action on climate change might be explained by an exploration of the concept of uptake in Rhetorical Genre Studies and by an exploration of the public genres that participate in climate change activism. Attention to genre uptakes – to the interconnections, interplays, and transactions between genres – can enrich an understanding of genres as social actions by focusing attention on the factors (material, social, affective, embodied, and technological) that influence the mobilization of knowledge and action between and across genres. Focusing on the uptake of a particular public genre, the petition, and on the actions/interactions that take place between and around the act of petitioning, the chapter provides further insight into the forces that shape uptakes of petitions, particularly climate change petitions, and that limit and enable social action on climate change. An examination of petitions (and their uptakes) as complex sites of transaction can also draw attention to mobilizations and actions that may happen along the pathway to uptake and social action – mobilizations in process that can lead to interventions in the climate change debate.

8.1 Introduction

> Uptake is first the taking of an object; it is not the causation of a response by an intention. (Freadman, 2002, 48)

In November 2017, at the end of what was widely regarded as a year of setbacks in US efforts and leadership to address climate change, and twenty-five years after the Union of Concerned Scientists issued the "World Scientists' Warning to Humanity," scientists from around the world published "World Scientists' Warning to Humanity: A Second Notice" (Ripple et al). Appearing in the Viewpoints section of the December 2017 issue of the journal *BioScience* and including 15,364 scientist signatories from 184 countries, the article has since been endorsed by an additional 4,404 scientists on the Alliance of World Scientists' website. The Alliance of World Scientists describes itself as

> a new international assembly of scientists, which is independent of both governmental and non-governmental organizations and corporations. We submit, that in order to prevent wides-

> pread misery caused by catastrophic damage to the biosphere, humanity must practice more environmentally sustainable alternatives to business-as-usual. Our vital importance and role comes from scientists' unique responsibility as stewards of human knowledge and champions of evidence-based decision-making. The main goal of the AWS is to be a collective international voice of many scientists regarding global climate and environmental trends and how to turn accumulated knowledge into action. (Alliance of World Scientists, 2017)

Scientists' near unanimous agreement about the fundamentals of climate change and steps needed to address it have been well-documented, but "how to turn accumulated knowledge into action" has been a source of frustration, enough so that world scientists felt the urgent need to issue the "second notice" warning to humanity.

Recalling the 1992 world scientists' warning that we cut greenhouse gas (GHG) emissions and phase out fossil fuels, reduce deforestation, and reverse the trend of collapsing biodiversity or face "substantial and irreversible harm" to our biosphere, the authors and signatories of the Second Notice warn that since 1992,

> with the exception of stabilizing the stratospheric ozone layer, humanity has failed to make sufficient progress in generally solving these foreseen environmental challenges, and alarmingly, most of them are getting far worse (...) Especially troubling is the current trajectory of potentially catastrophic climate change due to rising GHGs from burning fossil fuels (Hansen et al. 2013), deforestation (Keenan et al. 2015), and agricultural production – particularly from farming ruminants for meat consumption (Ripple et al. 2014). Moreover, we have unleashed a mass extinction event, the sixth in roughly 540 million years, wherein many current life forms could be annihilated or at least committed to extinction by the end of this century. (Ripple et al., 2017, 1026)

The authors and signatories conclude that, twenty-five years later, we have not heeded the first world scientists' warning. "Soon," they write, "it will be too late to shift course away from our failing trajectory, and time is running out. We must recognize, in our day-to-day lives and in our governing institutions, that Earth with all its life is our only home" (Ripple et al., 2017, 1028).

With so much at stake and what the editors of this volume describe as "the gap between the near-unanimous agreement in science about the basics of human made, or anthropogenic, climate change (ACC), and the widespread lack of acceptance of this agreement in the public sphere". The Alliance of World Scientists' question of "how to turn accumulated [scientific] knowledge into action" is more urgent than ever. To better understand the impasse between overwhelming scientific evidence of climate change and urgency/action on the part of citizens and political leaders, we will turn to genre and uptake and the role they play in the mobilization of knowledge, for as Amy Devitt argues in her contribution to this volume, genres *matter* for social action: "their conventions, norms, actions, systems, and potential invisibility direct the debate in sometimes unnoticed and sometimes unintentional ways" (add page #). In order to explore the ways genres direct the debate around climate change, we will begin by focusing on how the impasse between climate change evidence and the public's acceptance of and action on climate change might be explained by an understanding of genre uptakes as complex sites of selection and genre performance

and by an exploration of the affective, social, and material factors that shape uptake. Understanding how genres and their uptakes direct rhetorical and social actions also reveals possibilities for intervening in and redirecting these actions. As a case study, we will examine the uptake of a particular public genre, the petition, with a focus on the affordances and constraints of petitioning and the relationship between what Dylan Dryer (2016) calls the "uptake affordances" of petitions (the opportunities or constraints that shape encounters with and uptakes of petitions) and the "uptake enactments" (the act of producing a response). As we examine this complicated relationship between rhetorical action and social change, we will draw on illustrations/examples of climate change petitions, showing how a number of prior uptake strategies historically connected to petitioning seem to resurface, reemerge, or recur in a contemporary context and remain integral to carrying out a petition's actions. As we hope to show, attention to uptake's complex relationship to genre can help explain how other forces intervene in and redirect rhetorical and social action at the same time as it draws attention to mobilizations and actions that may not be as apparent. Paying attention to the forces that shape genre uptakes can help us examine where breakdowns in the climate debate happen and how to intervene.

In what follows, we begin by defining genre's relationship to uptake and how attention to genre uptake can reveal the often invisble forces directing social action. From there, we will demonstrate uptake at work in the genre of the petition, with specific reference to climate change. As we hope to show, recognizing the complex uptakes surrounding petitioning reveals how genres can be used to intervene in and redirect climate change action.

8.2 Genre and Uptake

Since its beginnings, scholarship in Rhetorical Genre Studies (RGS)[1] has been interested in the inter- and intra-generic relations that shape individuals' genre performances – what Anne Freadman (1994, 2002), extending J.L. Austin's concept of uptake in speech act theory, has called *genre uptakes*. Attention to genre uptakes – to the interconnections, translations, and pathways between genres – enriches an understanding of genres as social actions at the core of RGS' definition of genre. While genres orient us in relation to recurring situations and provide strategies for responding to and acting in situations, and while genres, as Dylan Dryer explains, "persist because they frame what they permit as that which is possible" (2008, 506), it is only in the uptakes they routinize (but never completely determine) that genres are performed – are taken up – as social actions.

1 See the groundbreaking work of Carolyn Miller, Charles Bazerman, Aviva Freedman and Peter Medway (1994), Amy Devitt, Catherine Schryer, David Russell, and Carol Berkenkotter.

In *How to Do Things with Words* (1962), J.L. Austin briefly mentions the idea of uptake as a way to explain how illocutionary force becomes a perlocutionary effect – how, that is, an intentional utterance helps to produce an effect under certain conditions. Within Austin's theory of speech acts, uptake is offered as a fairly straightforward process, secured by the apprehension (and then translation) of an intended illocutionary act. Freadman expanded and complicated Austin's causal theory of uptake in order to account for the interplays and trans-actions between genres, and, in so doing, made uptake a core concept in genre research. As Freadman is careful to note, uptake does not depend on causation (as in a job advertisement causes a job application) but rather on *selection*. Uptake, she explains, "selects, defines, or represents its object ... This is the hidden dimension of the long, ramified, intertextual memory of uptake: the object is taken from a set of possibilities" (2002, 48). By shifting our attention from causation to selection, Freadman offers uptake as a complex site of transaction, one informed by historical, material, political, affective, socio-economic, and ideological forces.

In Freadman's formulation of the relationship between genre and uptake – a relationship that Freadman understands as fundamental to how we use genres and how genres operate – genres condition and secure uptakes (Freadman, 2002, 42). One of the ways that genres help us perform social actions is by directing rhetorical force, moving it in typified directions, at times formalized in what John Swales has called "genre chains" (2004), to secure certain uptakes. Sune Auken has described this relational interchange, in which the use of one genre in turn acts as an invitation or request for another genre, as "in effect taking part in a social perpetuum mobile" (2018, 19). In exploring the relationship between Swales' concept of genre chains and Freadman's concept of uptake, Auken notes how genre chains mobilize uptakes in fairly regularized, sequential ways in which each genre is an uptake of the former: "a genre chain is a formalized series of uptakes. Genre chains are bound; they move in a particular order, and relate to one another in a particular hierarchy" (20). However, outside of formalized genre chains (and even in some cases within them), uptakes are more dynamic and unpredictable. As Auken observes, "an uptake can easily follow a chain, but it can also deviate from, turn, or twist the purpose of the chain. Also, one may insert one or more new genres into the process in an attempt to achieve a desired purpose" (20).[2]

This is why, as Freadman demonstrates, uptakes are not simply the consequences of genres – the meeting of a genre expectation. Uptakes also depend on dynamic relations between genres that enable the movement of knowledge and actions across

2 For more on the stability and variation inherent in the relationship between an utterance and its genre, and the role that generic structures play in the interpretation of works of literature, which has implications for understanding uptake, see Auken's "Genre and Interpretation" (2015a) and "Utterance and Function in Genre Studies: A Literary Perspective" (2015b).

them. In the *Prison Notebooks*, Antonio Gramsci (1971) writes, "The starting-point of critical elaboration is the consciousness of what one really is, and is 'knowing thyself' as a product of the historical processes to date, which has deposited in you an infinity of traces, without leaving an inventory" (323). As it pertains to genre research and teaching, Gramsci's critical elaboration points to the hidden dimension of uptake, which refers to the historical processes that stabilize relations and pathways between genres in ways that condition and secure, but never guarantee, certain effects. For example, as noted earlier, within speech act theory uptake refers to how an illocutionary act produces a perlocutionary effect – how, for instance, someone saying "it is hot in here" results in someone else, under certain conditions, opening a window. A set of relations has to exist in order for this uptake (this selection from a set of possibilities) to happen: the speaker's relation to others in the room; an interpretation of the utterance as referring to temperature and not, say, mood; a relationship between the location of a window and a person's ability/authority to open it; etc. Uptake, as such, refers both to the effect and the set of relations that produce that effect. As Gramsci's observation makes clear, though, the relations that inform our selection processes are often hidden. How to account for these relations when an inventory is not easily available is a major challenge uptake poses to the study of genre and its relationship to social action. And yet, we contend, critical attention to uptake relations provides valuable insight into how genres like the petition can be used to redirect public discourse around climate change.

Since first introducing the concept of uptake to genre research, Freadman's work has consistently alerted us to the ways that genre uptakes are complex sites of transaction that challenge a view of genre mobilization as located *in* genre knowledge and as being synonymous with human agency and intentionality.[3] For instance, in Freadman's early definition of uptake as "the bidirectional relation that *holds* between" genres (Freadman, 2002, 40; emphasis added), the pivotal term *holds* suggests a relational force or interplay that operates between genres. Uptakes, Freadman's definition suggests, are the result not of causation but of relation and selection – a set of relations that are held together in ways that make certain selections (and not others) possible and that as a result condition and secure certain outcomes (and not others). When studying uptake, then, we need to pay attention to the relations drawn, managed, and sponsored that enable the selection and taking up of knowledge and actions across genres, which enable and limit rhetorical and social movement. When Freadman writes that "uptake is first the taking of an object; it is not the causation of a response by an intention" (48), then, she refers to the relations between genres that uptakes hold and that make possible certain takings. These takings are not *caused* by genre but by the set of relations that hold between them. The seams between genres

3 See "Uptake" (2002), *The Machinery of Talk* (2004), "The Trap and Trappings of Genre Theory" (2012), and "Where is the subject?" (2014).

that uptakes weave and "hold," in other words, make movements and translations between and across genres possible. Uptake, then, is a vital part of genre knowledge, but because it takes place within a complex site of transaction, it also exceeds genre knowledge.

As "the local event of crossing a boundary" (43), uptake draws our attention not only to the relations between genres but also to how individuals move and translate across genres. It is especially when they occur across intergeneric boundaries, Freadman notes, that uptake translations are "least automatic and most open to mistake or even to abuse" (44) since they are most subject to relations of power and other extra-textual forces, as in the case of translating scientific knowledge about climate change into public action. Certain routinized uptakes, especially within bounded and regulated institutional contexts, follow well-worn, expected directions and are thus habitually and predictably enacted. But when moving across generic fields, as is required when scientific knowledge gets translated to public actions, other uptake relations come into play and exert force on the relations between scientific knowledge and its public uptake, in ways that affect how science is taken up – that is, how scientific knowledge is selected from a set of possibilities. What makes uptakes in this case especially interesting is that they compel us to pay attention to the extra-textual factors that inform genre performances, including the historical-material conditions and dynamics of agency and power that function between, hold together, and shape genre performances. As Freadman more recently put it:

> No genre can do more than predict the kind of uptake that would make it happy, and no speaker or writer can completely secure an uptake. This is partly because no discursive event is a pure example of any genre, and partly because of the unpredictable historical complexity of its moment and its ongoing action. We cannot [...] reflect productively on uptake outside of discussions of genre, nor is it productive to theorize the action of genres without uptake. Genre is destabilized by uptake even as it asserts its power. (2012, 560)

In short, uptake helps us understand how systemic, normalized relations between genres coordinate complex forms of social actions – how and why genres get taken up in certain ways and not others and what gets done and not done as a result. To study uptake, we need to pay attention to the spaces in between genres – the meso practices, interplays, transactions, and translations as well as the meta-genres (Giltrow, 2002) and intermediary genres (Tachino, 2012; 2016) that mobilize knowledge and action *between* and *across* genres. Focusing on these *trans* spaces, genres, and actions draws our attention to the seam-work that holds genres together in order for knowledge to move across them: who and what sponsors, sanctions, and manages our ability and willingness to engage in genre transaction work, and to the forces that make movement across genres possible, including the affordances, systems of valuation, materialities, embodiments, tools, media, technologies, and affective factors that authorize, manage, and sponsor the movement of knowledge across contexts and domains. Such a view of uptake can help explain why it can be so hard to turn

accumulated scientific knowledge into action, despite the mobilization of that knowledge in various professional, public, and popular media genres. Trying to understand how and why accumulated scientific knowledge has not turned into action with the urgency it needs to requires us to understand the phenomenon of movement itself, especially the entangled relationship between the mobilization of scientific knowledge and the material conditions, affective factors, and socioeconomic values that mediate it. Becoming mindful of this movement and its guiding forces, as Devitt, in this volume, argues, takes us a step closer towards making genres work *for* social action rather than only *as* social actions – in particular, making genres of the climate change debate work *for* transformative social action on climate change.

8.3 Dimensions of Uptake in the Mobilization of Knowledge and Action

In the previous section, we described how uptakes result from/are made possible through configured, normalized, and activated relations between genres – relations that shape what comes to matter and how it gets taken up as such. Karen Barad (2007) has explored the dynamic relationship between matter and meaning, arguing that "mattering is simultaneously a matter of substance and significance" (3). According to Barad, how something comes to matter (have substance) is entangled with how it is made significant. How an utterance such as "it is hot in here" comes to matter (have substance in the form of someone opening a window) depends on the significance accorded to it. Uptakes are, in part, how we recognize significance in one genre and take it up as substance. In this way, uptakes make genres matter. But this process of mattering, as we have described, is subject to forces greater than genre alone, no matter if genres seek to secure and condition certain uptakes. For example, in the case of the Alliance of World Scientists' warning to humanity, what would make their Second Notice matter is if governmental agencies and the public take up their recommendations. But for these recommendations to become substance, they first need to be made significant *alongside* or in relation to other kinds of significations, which exert their gravitational push and pull on how the Second Notice gets taken up.

Scholarly analyses of climate change skepticism have examined the economic, cultural, political, cognitive, sociological, and ideological influences on why individuals remain skeptical of climate change (see Dunlap, 2013; Hamilton, 2010; Jacques, 2006; Thompson, 2003; Whitmarsh, 2011). In their review of literature, Van Rensburg and Head (2017) note a prevailing research strand that identifies how "worldviews are acting indirectly, as background dispositions that are reinforced by various cognitive and psycho-sociological mechanisms" (3) to shape climate change denial. Van Rensburg and Head's textual analysis of a well-known Australian climate change skeptic's opinion pieces reveals, in addition, the discursive patterns and specific terms through which climate change skepticism circulates and is perpetuated. "We argue,"

they conclude, "that examining the specific objections of sceptics is important for devising more effective responses. We argue that climate communicators and practitioners should constructively, patiently, and persistently respond to sceptical criticisms, instead of trying to starve sceptics of public exposure by refusing to engage them" (8). Such research provides insights into the competing forces that shape and limit the uptake of scientific knowledge about climate change, especially in regions where individuals perceive environmental regulations as a threat to their livelihoods, culture, and economy.[4]

The entangled and at times competing forces that shape what comes to matter (to be made significant and come to have substance) in the taking up of genres requires closer scrutiny if we are to more fully understand how to turn accumulated scientific knowledge into action. In his recent chapter "Disambiguating Uptake: Toward a Tactical Research Agenda on Citizens' Writing," Dylan Dryer (2016) begins the process of identifying different elements involved in uptake as a phenomenon. Dryer identifies five elements in particular: uptake affordances, uptake artifacts, uptake enactments, uptake capture, and uptake residue. *Uptake affordances* refer to the conditions and invitations that facilitate an uptake – something that is offered to be taken up (65-68, 70–71). By paying attention to uptake affordances, researchers are able to focus on "the opportunities and constraints in the conventions that precede and shape the uptake encounter" (70). *Uptake artifacts* refer to the texts or objects produced in response to other texts, the artifacts that result from an uptake (65, 71). *Uptake enactments* refer to the act of producing an utterance or text in response to uptake affordances – the performance or undertaking of an uptake (65, 70, 72, 74). *Uptake capture* refers to the cognitive or affective consequences of uptake, the way "repeated encounters with genres have lingering effects on what writers see – or indeed are *able* to see – as the realm of the possible…" (65). Researchers focused on uptake captures examine what successive uptakes do to readers and writers, how they become sedimented as dispositions. *Uptake residue*, which for Dryer is closely related to uptake capture, refers

4 A recent story in *ScienceDaily* (2017), "Understanding Alternative Reasons for Denying Climate Change Could Help Bridge Divide," profiled sociologist Jacob Lipsman's research on climate change denial which challenges mainstream criticism that climate skeptics are out of touch, ignorant, or unwilling to accept scientific facts about climate change. In particular, Lipsman examined "the links between attitudes about climate change and local discursive and political processes surrounding coastal restoration issues" in two Louisiana parishes adjacent to the mouth of the Mississippi River, a region that has lost over 1,800 square miles of land to coastal erosion (*ScienceDaily*, 2017). As Lipsman concludes, "If an individual or a community is resistant to the idea of climate change for economic or social reasons, climate advocates will not be able to effectively communicate with these individuals about climate change simply by presenting more data […]. By better understanding the processes of climate change denial, climate advocates will be better equipped to have an effective dialogue with individuals and communities that are skeptical of these ideas" (*ScienceDaily*, 2017).

to the accumulation and sedimentation of relations/configurations that accrue over time as a result of repeated uptakes and become part of shared, cultural memory (66). These dimensions of uptake clearly interact: "the more normalized the *uptake affordance*, the more instantaneous and "natural" the moment of *uptake capture*; the more powerful the *uptake artifact*, the more habitual the *uptake enactment*, and the more deeply sedimented the *uptake residues*" (66). This interaction is particularly acute within genre chains, as we discussed earlier. Dryer concludes that "we must attend to the multifaceted ways uptake unfolds so we can investigate each dimension empirically and study public participation in ways that do justice to its complexity" (66). As we will show in the following case study of petitioning, examining these dimensions of genre uptake can help provide insight into the complex relations and processes involved in how accumulated scientific knowledge about climate change can be turned into public action.

8.4 Taking up a Public Genre: Petitioning for Climate Change

Following our previous examination of the complex uptake performances that take place in-between and around genres, in this section we will focus on the uptake of a particular public genre, the petition, and the performances that take place in-between and around the act of petitioning. Drawing on Dryer's multiple concepts of uptake, this section will examine the various relational forces that shape uptakes of petitions, specifically climate change petitions. Dryer notes the significance of studying genre uptake in the public sphere and the role of Rhetorical Genre Studies (RGS) in enacting social change:

> These studies are of more than theoretical interest: an enormous amount of public and public-sector writing on these topics will take place in the next decades as sea-level rise forces us to triage our coastal cities' built resources. RGS must help shape the texts that invite citizens to contribute meaningful writing and ensure that citizens' writing is taken up in the most productive ways. (2016, 64)

By looking outside the academy and beyond traditional academic genres, particularly at public genres that work to mobilize diverse publics and to motivate and bring about change, we can learn much about the relationship between rhetorical action and social change. The public petition, in particular, is a genre whose exigency *is* social change. It functions rhetorically to respond and to motivate response – in the US context, "to petition the government for a redress of grievances" (constitutionus.com). Petitions, by mediating between citizens and authorities, operate in the middle spaces, and as an intermediary genres of sorts, can help (re)direct, manage, and intervene in available uptakes. We noted previously the competing forces at play in uptakes, and petitions function as an in-between space where uptakes might be brokered and redirected. If uptake offers a vision of genre as *relational* – a vision of genre in *inter-*

play with other genres or a vision of genre as *movement* – then the genre of the petition, as a tool of *mobilization*, can provide insight into the material, social, affective, and agentive factors that shape uptakes of petitions and that limit and enable social action. Importantly, petitions can also draw attention to mobilizations and actions that may not yet appear as such – mobilizations in process. By revealing such mobilizations in process, uptake can help climate change activists use petitions more effectively to lay groundwork for social action.

The following case study, then, will examine the "uptake profiles" of petitions – or "the social motives, relations, values, and assumptions embodied within a genre that frame how, why and when to act" (Bawarshi & Reiff, 2010, 77), with the goal of continuing to take up the central theme of this edited volume – the "activistic" focus on how genres can influence social change. We will begin with a brief description of the genre of the petition and its historical evolution before moving on to examine more contemporary petitions, including climate change petitions. In addition, we will explore the relationship between "uptake affordances" of petitions – or the "opportunities or constraints…that precede and shape" encounters with and uptakes of petitions (Dryer, 2016, 65) – and "uptake capture" or the affective, cognitive and embodied factors that shape the uptake of petitions (65), specifically petitions related to environmental activism and climate change. Finally, we will examine how participating in climate change petitions might both limit and enable "uptake enactments" or the act of producing a response to climate change.

8.5 Petitions, Uptake Affordances, and Uptake Captures

Historically, petitions have afforded opportunities for citizens to appeal to established authorities and to have a voice in civic matters. Public petitions, since long before the Enlightenment, have been rhetorical sites of political participation, playing a significant role in revolutionary rebellions against taxes and the Whiskey Rebellion (both of which came about due to a lack of response to the glut of petitions) and in reforms due to temperance petitioning, antislavery and antiremoval campaigns, or the suffrage movement. Historical studies of the petition have examined the impact of petitioning on the maintenance of social order in Roman Egypt (Kelly, 2011), on origins of democratic culture in early-modern England (Zaret, 2000), and on political participation in early colonial America (Bailey, 1979; Maier, 1991). Other studies have focused specifically on women's activism and the role of petitioning in 19th-century Native American anti-removal and antislavery movements (Portnoy, 2005; Zaeske, 2003); on transnational activism and the role of citizen-petitions in the North American Free Trade Agreement (Graubart, 2008); or on the role of petitions in the decentralization of Chinese authoritarianism (Chen, 2016). Lex Heerma van Voss (2001) has argued that "petitions are social history…showing the evolving ways in which individuals

and social movements used petitions" (3), and he further reflects on the "global phenomenon" of those in the past who used their right to petition,

> [...] from Egyptian building workers in pharaonic times to illiterate Ecuador Indians in 1899; from anti-Catholic English women in 1642 to French workers asking for the repeal of the *livret ouvrier* in 1847; from Italian peasants complaining about noble banditry in 1605, to Brazilian slaves vindicating their rights against their owner in 1823; from western European early modern guild members to German Democratic Republic workers demanding improvement of economic efficiency, or voicing consumer demands. (1-2)

The studies featured in van Voss' edited collection further demonstrate this global phenomenon of petitioning, with studies of petition movements in early modern central Europe, early modern Italy, 18th-century France, colonial Andhra, and early 20th-century Republic of Byelorussia and nationalist China, among others.

Despite a number of wide-ranging historical and sociological studies of petitions as a force for social action, there have been relatively few studies of the petition from a rhetorical or RGS perspective, with the exception of Zaeske's analysis of how the language of women's antislavery petitions reflects their shifting political identities; Thieme's related study (2006) of uptake and genre in the Canadian suffrage debate (which focuses on a number of other social movement genres that move beyond petitions); and Reiff's study (2016) of the material factors (cultural, economic, geographic, technological) affecting the rhetorical action of the petition. Nonetheless, the genre of the petition fits squarely into what Devitt, in this volume, describes as a genre that "operate[s] not just *as* social action but also *for* social action" (add page #), which makes it a meaningful genre for exploring the interaction of rhetorical and social action. Through its conventions, the petition affords citizens a pathway to intervening in public matters and functions as a tool for coordinating civic actions. While the petition's textual features have shifted and changed across time, the genre's conventions include the following salient features or sequence of rhetorical "moves"[5]:

1) an opening address to an authority;
2) an expression of the grievance;
3) a recommendation for action;
4) a list of signatories.

The list of signatories, in particular, is an affordance that precedes and shapes the uptake and "fosters new networks by virtue of the process of gathering signatures" (Carpenter, 2003, 1). These conventions, then, work to facilitate uptake as petitions make possible opportunities for the disempowered to mobilize support, make their

5 John Swales (1990) modeled an approach to genre analysis that begins with identifying a genre's typical moves. Our identification of the petition's typical moves lends itself to a Swalesian move analysis.

opinions known to those in power, and mediate between critique – bringing forward a grievance – and change, or the redress of the injustice.

Uptake affordances of petitions, historically, have been shaped by what Dryer (2016) calls "uptake capture" – the dispositional, affective, and embodied influences on uptake – or what he describes as the "cognitive or affective consequences of uptakes" (65). The embodied experiences of petitioners and their affective consequences can be seen most readily in early petitions, where petitioning bodies engaged (rather strategically) in rhetorical action under specific physical and spatial conditions. For example, in pre-revolutionary England, in order for citizens to have their petitions taken up and acted upon by authorities, they were physically presented to rulers, often thrust into their hands. This physical presentation of petitions, chronicled by David Zaret (2000), began as early as the reign of Edward III (1312-1377) when "petitioners sought him out when he was hunting in the royal forests or fighting on the border" (85). With the popularization of petitioning and "incessant demands from rich and poor petitioners," this trend continued, extending from James I (1556-1625), who was stalked in the back stairways of the palace or while on hunts in the royal forest by those presenting petitions, to his successor Charles I (1600-1649), who often sent two ushers ahead of the king to prevent petitioners from thrusting petitions into the king's hands (85). Later, petitioners in the 17th and 18th century would march their petitions to Parliament or walk their petitions to the county court for collection, and 19th-century female anti-slavery petitioners canvassed, went door to door, gathered signatures, and talked to women face to face in sewing circles and literary societies – affective, interpersonal encounters that had "lingering effects" (Dryer, 2016, 65). An historical account of the circulation of local petitions in the antebellum public further demonstrates these embodied, dispositional and affective influences on and of uptake:

> These were your neighbors who sought you out in your home or field or forest, behind your counter, at your desk, with your team – in a time more innocent than ours, before such canvassing was commonplace and at a time when a petition meant something....The woman who approached you with her petition in hand, at Wednesday night prayer meeting, or in your barbershop or at your door, would probably be somebody you knew, or somebody who knew somebody you knew. (Miller, 1995, 305)

Earlier we referred to Freadman's definition of uptake as "the bidirectional relation that *holds* between" genres, and the embodied interactions of petitioners, who knew and had relationships with petitioners, act as a kind of interpersonal capture – a building of and "holding" of relations that make certain uptake selections possible or that make genres, in this case the petition, matter. These uptake captures are, in an important way, preludes to actions, cultivating dispositions for later actions. For example, in 19th century anti-slavery petition movements, signing a petition might encourage and coordinate further civic actions or "correspondence networks," such as women joining a female antislavery society, attending antislavery fairs or conven-

tions, or making a donation to support the cause. Uptake capture, then, can create additional uptake affordances or conditions around petitions that invite additional uptakes. In the case of climate change, where public discourse (and skepticism) is powerfully shaped by economic, cultural, political, cognitive, sociological, and ideological influences, the uptake captures made possible through petitioning can become an important counterforce that lays the groundwork (affordances) for a different relation to and taking up of the climate change debate. At the same time, it is interesting to consider how these uptake affordances – the conditions and invitations that facilitate an uptake – and uptake captures, or interpersonal relationships that shape uptakes and consequences, can become constraints as we move to more contemporary petitions, such as climate change petitions. Mailed petitions or electronic petitions are more distanced by time and space and more "disembodied," with more of a reliance on discursive and rhetorical strategies to promote mutuality and connectedness to shape uptakes. The actions that were coordinated by, for example, correspondence networks of women in the 19th century are later coordinated by a network of genres that operate as an integrated rhetorical and epistemic site, as seen by the following mailed petition to "Save our Environment" (See Figure 1). This petition from the Natural Resources Defense Council (NRDC) was sent during the George W. Bush presidency, and depicts the genre network of petitions containing 1) a letter from the president of the organization and a high-profile person (organizations, such as NRDC, often include "personal messages" from more high-profile figures like Robert F. Kennedy and Robert Redford); 2) a fact sheet or action plan; 3) a petition written on the reader's behalf and addressed to the reader's congressional representatives or to other appropriate audiences; and 4) perhaps most significantly, a contribution card, which is often attached to the petition. These intergeneric texts of the petition work together to try to "turn accumulated knowledge into action" (Alliance of World Scientists) as they assemble fact sheets on climate change addressed to citizens alongside petition cards addressed to political leaders.

The uptake affordances – or "opportunities and constraints in the conventions that precede and shape the encounter" (Dryer, 2016, 65) – can easily be detected in the NRDC petition. The letter from a high-profile figure, Robert Redford – what Bawarshi (2016) has labeled an "uptake sponsor" (56) – does the work of opinion formation previously developed through face-to-face discussion and canvassing. In place of the more personalized human interaction, more contemporary print petitions include written letters and fact sheets, like the ones depicted in Figure 1, or personal testimonials that make emotional appeals, such as the appeal from Robert Redford, who decries the gutting of the Clean Air Act, deregulations favoring polluting industries, and the opening of national forests to drilling, logging, and mining: "These blatant special interest handouts are a radical departure from the values of environmental protection that most Americans hold dear." Without the embodied or relational transactions of face to face canvassing, print petitions must strategically create their own uptake captures or "lingering effects" that motivate action and response

Petition Sample

ROBERT REDFORD

Dear Fellow Environmentalist,

Too many Americans are unaware that the Bush Administration is now waging a sweeping attack on our environmental laws and natural heritage.

With the media focused on Iraq and other issues, it has been difficult to get coverage of cynical new policies that will enrich giant corporations even as they increase pollution and destroy some of our most treasured wildlands.

The Administration recently created a massive new loophole in the Clean Air Act that will allow 17,000 of the nation's worst polluters to spew more toxic chemicals into our air and harm the health of millions of Americans.

It has proposed new rules that will open all 155 of our national forests to logging, drilling and mining by eliminating the fundamental rule that protects wildlife and by scaling back environmental reviews.

And it has intervened to block a vitally needed program that would stem the flow of raw sewage into America's oceans, rivers and other waterways.

These blatant, special interest handouts are a radical departure from the values of environmental protection that most Americans hold dear.

Even worse, key committees in the Senate are now chaired by stalwart allies of polluting industries who are flat out hostile to our environmental laws.

That means we cannot count on the Senate to act as a brake on the President's plans to speed up energy development in Greater Yellowstone . . . to allow open-pit mining in the Florida Everglades . . . and to accelerate devastating clearcutting in our Alaskan rainforest.

The vast majority of Americans are opposed to such corporate raids on our natural heritage, but they will come to pass if we don't unite right now to prevent them.

The first and best way to do that is to let the President and Congress know we are watching and will hold them fully accountable.

The President's campaign to dismantle our environ-

(over, please)

RC Recycled paper

(FRONT OF LETTER)

mental laws could be derailed instantly if millions of Americans would speak out in opposition. After all, a quick look at last fall's closest Senate races shows that those candidates who won -- both Democrat and Republican -- promoted themselves as guardians of the environment.

It's time to hold them to that promise.

Do your part by signing the enclosed Petitions to President Bush and your U.S. Senators. Tell them you are watching and will not tolerate attacks on our environment.

Then, please take a moment to read the enclosed letter from John Adams, NRDC's President. After you do, I hope you'll join me as a fellow Member of the Natural Resources Defense Council.

I've been on NRDC's Board of Trustees for 28 years. I can assure you that, with a staff of 250 top-flight environmental professionals and the backing of over 550,000 Members, NRDC is a powerhouse organization that can take on the White House and win.

Over the past two years, NRDC has blown the whistle on every single attempt by this Administration to undermine our environmental laws. Its hard work has paid off in story after story about the shortsighted attacks on our natural heritage.

Again and again, NRDC's lawyers have stopped the Bush Administration in its tracks by going to federal court and winning last-minute reprieves for some of America's most treasured ecosystems. Today, NRDC is mobilizing its activist network of over one million Americans in preparation for the Administration's next onslaught against our environment.

They need and deserve your support.

Remember, the White House can continue this sweeping attack on our environment only if Americans remain silent. Let me know you'll join with us in protesting and stopping it.

Sincerely,

Robert Redford
NRDC Board of Trustees

(BACK OF LETTER)

Petition Sample

SAVE OUR ENVIRONMENT!

URGENT ACTION REPLY FORM

I AM OUTRAGED that the Bush Administration is using the war on terrorism and its success at the polls as a pretext to dismantle our environmental laws and destroy our last wild places. I want to help NRDC fight in court and mobilize millions of Americans in defense of our natural heritage.

Enclosed is my tax-deductible, Membership contribution to NRDC of:

☐ $10 ☐ $20 ☐ $35 ☐ $50 ☐ $100 ☐ Other $______

Can you give $20 or more to help build this campaign in defense of our environment?

Your contribution of $10 or more entitles you to an NRDC canvas tote bag.

☐ I am enclosing a check. ☐ I want to charge my gift to: ☐ Visa ☐ Mastercard ☐ AmEx

Card# ____________ Exp Date______ Signature ____________

☐ I have signed my Petitions. Please deliver copies to the President and both of my Senators, and use them in your campaign to rally millions of Americans against the Administration's pro-polluter agenda.

Here's my e-mail address. Please send me action alerts:____________

☐ *Please do not send me a tote bag. I'd like NRDC to use my entire gift to defend our environmental rights.*

******AUTO**5-DIGIT 37931
P3C102 3308683054
Ms. Mary Jo Reiff
4523 Haverty Dr.
Knoxville, TN 37931-3658

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

Please make your check payable to NRDC and return it along with this entire form to: P.O. Box 1830, Merrifield, VA 22116-8030

Please do not detach

Petition to President George W. Bush

Dear President Bush,

I am appalled that your Administration has escalated its attacks on our environment since the last election. Americans did not vote to let corporations increase air and water pollution, cut down our wild forests, or destroy our public lands. Nor does the war on terrorism give you license to dismantle our vital environmental safeguards. I call on you to uphold thirty years of bi-partisan, environmental progress by enforcing our environmental laws and preserving our natural heritage.

X ____________
Signature
Ms. Mary Jo Reiff
Address

Petition to the U.S. Senate

Dear Senator,

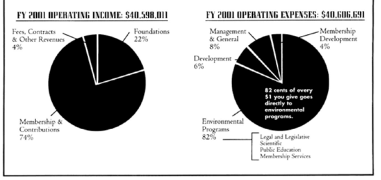
I am appalled that the Bush Administration has escalated its attacks on our environment since the last election. Americans did not vote to let corporations increase air and water pollution, cut down our wild forests, or destroy our public lands. I strongly support enforcement of our environmental laws and preservation of our natural heritage. I call on you to defend thirty years of bi-partisan, environmental progress and urge President Bush to reverse his destructive and shortsighted policies.

X ____________
Signature
Ms. Mary Jo Reiff
Address

RJR

Out of every dollar you contribute, 82 cents goes directly to NRDC Environmental Programs.

NRDC Financial Statement — Fiscal Year 2001

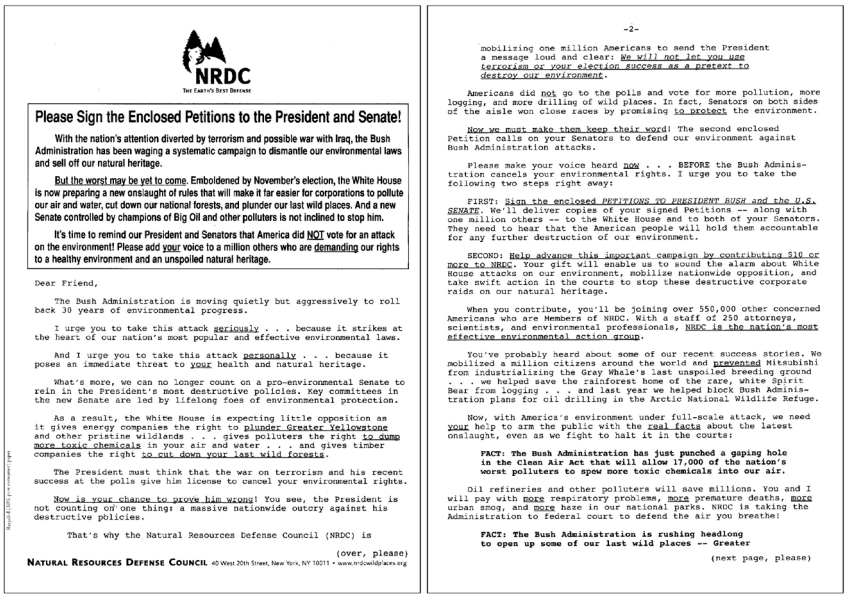


NRDC takes pride in our careful stewardship of your contributions. An audited financial report is available free upon request. Certain states require us to advise you that a copy is also available from them. If you would like financial information, please contact NRDC, 40 West 20 Street, New York, NY 10011 or these state agencies: FLORIDA: A copy of the official registration and financial information may be obtained from the Division of Consumer Services by calling Toll-Free 1-800-435-7352 within the state. Registration does not imply endorsement, approval, or recommendation by the state. ILLINOIS: Charitable Trust and Solicitations Bureau, 100 West Randolph St., 12th floor, Chicago, IL 60601. MARYLAND: For the cost of copies and postage: Office of the Secretary of the State, State House, Annapolis, MD 21401. MICHIGAN: Registration no. 9641. MISSISSIPPI: The official registration and financial information of the Natural Resources Defense Council may be obtained from the Mississippi Secretary of State's office by calling 1-888-236-6167. Registration by the Secretary of State does not imply endorsement. NEW JERSEY: Information filed with the Attorney General concerning this charitable solicitation may be obtained from the Attorney General of the State of New Jersey by calling 973-504-6215. Registration with the Attorney General does not imply endorsement. NEW YORK: Office of the Attorney General, Department of Law, Charities Bureau, 120 Broadway, New York, NY 10271. NORTH CAROLINA: Financial information about this organization and a copy of its license are available from the state solicitation licensing branch at 1-888-830-4989. The license is not an endorsement by the state. PENNSYLVANIA: The official registration and financial information of the Natural Resources Defense Council may be obtained from the Pennsylvania Department of State by calling toll-free, within Pennsylvania, 1-800-732-0999. Registration does not imply endorsement. VIRGINIA: State Division of Consumer Affairs, Department of Agricultural and Consumer Services, P.O. Box 1163, Richmond, VA 23218. 1-800-332-4483. WASHINGTON: Charities Division, Office of the Secretary of State, State of Washington, Olympia, WA 98504-0422. 1-800-552-9963. WEST VIRGINIA: Residents may obtain a summary from: Secretary of State, State Capitol, Charleston, WV 25305. Registration with any of these states does not imply endorsement, approval, or recommendation by the state.

(FRONT OF PETITION / REPLY FORM)

(BACK OF PETITION / REPLY FORM)

Petition Sample



NRDC
THE EARTH'S BEST DEFENSE

Please Sign the Enclosed Petitions to the President and Senate!

With the nation's attention diverted by terrorism and possible war with Iraq, the Bush Administration has been waging a systematic campaign to dismantle our environmental laws and sell off our natural heritage.

But the worst may be yet to come. Emboldened by November's election, the White House is now preparing a new onslaught of rules that will make it far easier for corporations to pollute our air and water, cut down our national forests, and plunder our last wild places. And a new Senate controlled by champions of Big Oil and other polluters is not inclined to stop him.

It's time to remind our President and Senators that America did NOT vote for an attack on the environment! Please add your voice to a million others who are demanding our rights to a healthy environment and an unspoiled natural heritage.

Dear Friend,

The Bush Administration is moving quietly but aggressively to roll back 30 years of environmental progress.

I urge you to take this attack seriously . . . because it strikes at the heart of our nation's most popular and effective environmental laws.

And I urge you to take this attack personally . . . because it poses an immediate threat to your health and natural heritage.

What's more, we can no longer count on a pro-environmental Senate to rein in the President's most destructive policies. Key committees in the new Senate are led by lifelong foes of environmental protection.

As a result, the White House is expecting little opposition as it gives energy companies the right to plunder Greater Yellowstone and other pristine wildlands . . . gives polluters the right to dump more toxic chemicals in your air and water . . . and gives timber companies the right to cut down your last wild forests.

The President must think that the war on terrorism and his recent success at the polls give him license to cancel your environmental rights.

Now is your chance to prove him wrong! You see, the President is not counting on one thing: a massive nationwide outcry against his destructive policies.

That's why the Natural Resources Defense Council (NRDC) is

(over, please)

NATURAL RESOURCES DEFENSE COUNCIL 40 West 20th Street, New York, NY 10011 • www.nrdcwildplaces.org

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mobilizing one million Americans to send the President a message loud and clear: *We will not let you use terrorism or your election success as a pretext to destroy our environment.*

Americans did not go to the polls and vote for more pollution, more logging, and more drilling of wild places. In fact, Senators on both sides of the aisle won close races by promising to protect the environment.

Now we must make them keep their word! The second enclosed Petition calls on your Senators to defend our environment against Bush Administration attacks.

Please make your voice heard now . . . BEFORE the Bush Administration cancels your environmental rights. I urge you to take the following two steps right away:

FIRST: Sign the enclosed *PETITIONS TO PRESIDENT BUSH and the U.S. SENATE*. We'll deliver copies of your signed Petitions -- along with one million others -- to the White House and to both of your Senators. They need to hear that the American people will hold them accountable for any further destruction of our environment.

SECOND: Help advance this important campaign by contributing $10 or more to NRDC. Your gift will enable us to sound the alarm about White House attacks on our environment, mobilize nationwide opposition, and take swift action in the courts to stop these destructive corporate raids on our natural heritage.

When you contribute, you'll be joining over 550,000 other concerned Americans who are Members of NRDC. With a staff of 250 attorneys, scientists, and environmental professionals, NRDC is the nation's most effective environmental action group.

You've probably heard about some of our recent success stories. We mobilized a million citizens around the world and prevented Mitsubishi from industrializing the Gray Whale's last unspoiled breeding ground . . . we helped save the rainforest home of the rare, white Spirit Bear from logging . . . and last year we helped block Bush Administration plans for oil drilling in the Arctic National Wildlife Refuge.

Now, with America's environment under full-scale attack, we need your help to arm the public with the real facts about the latest onslaught, even as we fight to halt it in the courts:

FACT: The Bush Administration has just punched a gaping hole in the Clean Air Act that will allow 17,000 of the nation's worst polluters to spew more toxic chemicals into our air.

Oil refineries and other polluters will save millions. You and I will pay with more respiratory problems, more premature deaths, more urban smog, and more haze in our national parks. NRDC is taking the Administration to federal court to defend the air you breathe!

FACT: The Bush Administration is rushing headlong to open up some of our last wild places -- Greater

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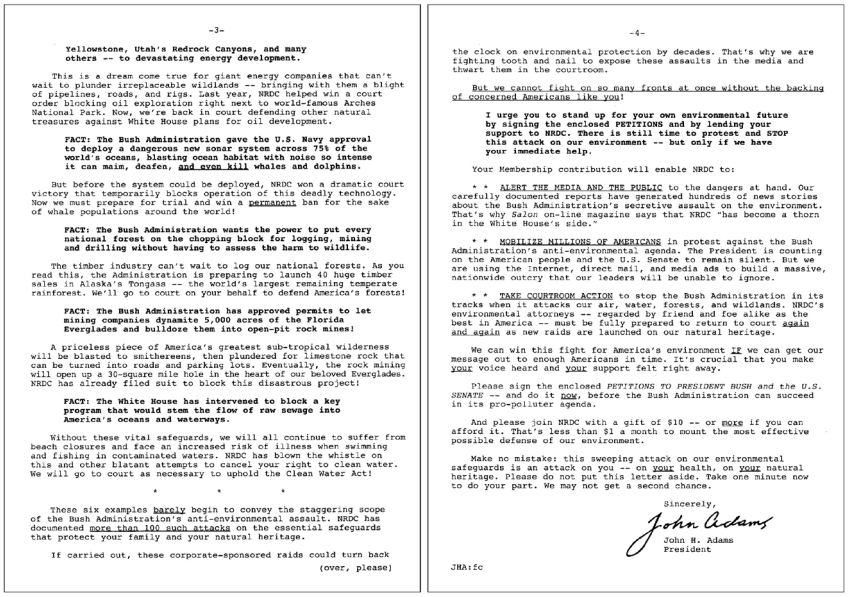
Petition Sample



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Yellowstone, Utah's Redrock Canyons, and many others -- to devastating energy development.

This is a dream come true for giant energy companies that can't wait to plunder irreplaceable wildlands -- bringing with them a blight of pipelines, roads, and rigs. Last year, NRDC helped win a court order blocking oil exploration right next to world-famous Arches National Park. Now, we're back in court defending other natural treasures against White House plans for oil development.

FACT: The Bush Administration gave the U.S. Navy approval to deploy a dangerous new sonar system across 75% of the world's oceans, blasting ocean habitat with noise so intense it can maim, deafen, and even kill whales and dolphins.

But before the system could be deployed, NRDC won a dramatic court victory that temporarily blocks operation of this deadly technology. Now we must prepare for trial and win a permanent ban for the sake of whale populations around the world!

FACT: The Bush Administration wants the power to put every national forest on the chopping block for logging, mining and drilling without having to assess the harm to wildlife.

The timber industry can't wait to log our national forests. As you read this, the Administration is preparing to launch 40 huge timber sales in Alaska's Tongass -- the world's largest remaining temperate rainforest. We'll go to court on your behalf to defend America's forests!

FACT: The Bush Administration has approved permits to let mining companies dynamite 5,000 acres of the Florida Everglades and bulldoze them into open-pit rock mines!

A priceless piece of America's greatest sub-tropical wilderness will be blasted to smithereens, then plundered for limestone rock that can be turned into roads and parking lots. Eventually, the rock mining will open up a 30-square mile hole in the heart of our beloved Everglades. NRDC has already filed suit to block this disastrous project!

FACT: The White House has intervened to block a key program that would stem the flow of raw sewage into America's oceans and waterways.

Without these vital safeguards, we will all continue to suffer from beach closures and face an increased risk of illness when swimming and fishing in contaminated waters. NRDC has blown the whistle on this and other blatant attempts to cancel your right to clean water. We will go to court as necessary to uphold the Clean Water Act!

* * *

These six examples barely begin to convey the staggering scope of the Bush Administration's anti-environmental assault. NRDC has documented more than 100 such attacks on the essential safeguards that protect your family and your natural heritage.

If carried out, these corporate-sponsored raids could turn back

(over, please)

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the clock on environmental protection by decades. That's why we are fighting tooth and nail to expose these assaults in the media and thwart them in the courtroom.

But we cannot fight on so many fronts at once without the backing of concerned Americans like you!

I urge you to stand up for your own environmental future by signing the enclosed PETITIONS and by lending your support to NRDC. There is still time to protest and STOP this attack on our environment -- but only if we have your immediate help.

Your Membership contribution will enable NRDC to:

* * ALERT THE MEDIA AND THE PUBLIC to the dangers at hand. Our carefully documented reports have generated hundreds of news stories about the Bush Administration's secretive assault on the environment. That's why *Salon* on-line magazine says that NRDC "has become a thorn in the White House's side."

* * MOBILIZE MILLIONS OF AMERICANS in protest against the Bush Administration's anti-environmental agenda. The President is counting on the American people and the U.S. Senate to remain silent. But we are using the Internet, direct mail, and media ads to build a massive, nationwide outcry that our leaders will be unable to ignore.

* * TAKE COURTROOM ACTION to stop the Bush Administration in its tracks when it attacks our air, water, forests, and wildlands. NRDC's environmental attorneys -- regarded by friend and foe alike as the best in America -- must be fully prepared to return to court again and again as new raids are launched on our natural heritage.

We can win this fight for America's environment IF we can get our message out to enough Americans in time. It's crucial that you make your voice heard and your support felt right away.

Please sign the enclosed *PETITIONS TO PRESIDENT BUSH and the U.S. SENATE* -- and do it now, before the Bush Administration can succeed in its pro-polluter agenda.

And please join NRDC with a gift of $10 -- or more if you can afford it. That's less than $1 a month to mount the most effective possible defense of our environment.

Make no mistake: this sweeping attack on our environmental safeguards is an attack on you -- on your health, on your natural heritage. Please do not put this letter aside. Take one minute now to do your part. We may not get a second chance.

Sincerely,

John Adams

John H. Adams
President

JHA:fc

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Fig. 1: National Resources Defense Council (NRDC) Petition.

through the presentation of shocking facts (fact sheets describing the "dynamit[ing of] 5,000 acres of the Florida Everglades" or "the flow of raw sewage into America's oceans and waterways") and personal pleas by the president of the NRDC ("I urge you to stand up for your own environmental future by signing the enclosed petitions and by lending your support to NRDC").

If uptake is the "contextualized, strategic performance of genres in moments of interaction" (Bawarshi, 2016, 45), then the shift from a small coalition of canvassers to large NPOs like the NRDC entails a shift in the tactical dimensions of the symbolic interchange as the sequence of uptakes becomes further removed. For example, the NRDC delivers this emotional plea to the President on behalf of citizens, with a space left for the petitioner to sign: "I am appalled that your administration has escalated its attacks on the environment.... I call on you to uphold 30 years of bi-partisan, environmental progress by enforcing our environmental laws and preserving our natural heritage" – a simulated uptake capture that can then become internalized as one's own position. The NRDC petition demands an active uptake in its action plan, and the role of agency here is interesting since citizens are asked to take action to "save our environment" by signing the petition and making a contribution so that the sponsoring organization can then take action by "alerting the media, mobilizing Americans, or taking courtroom action" (Fact Sheet). But what is the range of transformation permitted by this genre's "uptake profile" if the actions are taken on behalf of citizens by a mediating organization, thus delimiting the relationship between agency and action? Unlike early petitioners' presentation of their petitions, often in person, in contemporary petitions organizations express a grievance on the petitioner's behalf, while the petitioner's role consists of signing the petition and checking the contribution card that will enable the organization to coordinate social actions. While the petition might serve to inform recipients of anti-environmental policies and might mobilize support for the NRDC and for environmental causes in general, the direct interaction between citizens and authorities (particularly authorities with the power to affect climate change legislation) is mediated. This mediation reduces one of the rhetorical and social advantages petitions afford in redirecting climate change action. At the same time, as we see next, such mediation can make possible other uptake captures that can powerfully impact the climate change debate.

This mediation of uptakes – and mediation between citizens' petitions and authorities' responses – becomes even more pronounced as we consider how climate change petitions operate on a global scale. Hari M. Osofsky (2007) examines a petition filed in 2005 against the US government by US and Canadian Inuit citizens claiming that US climate change policy violates their rights as a culture that thrives on "land, ice, and snow" (697). The petition was filed with the Inter-American Commission on Human Rights and taken up by Sheila Watt-Cloutier, Chair of the Inuit Circumpolar Conference, in her statement before a UN conference on climate change. Osofsky notes what we would recognize as the unique "uptake affordances" of this "intersectional" petition: "It reframes a problem, typically treated as an environmental one

through a human rights lens and moves beyond the confines of US law to a supranational forum" (676). In so doing, the petition works to shape "uptake capture" – to maximize the affective consequences of uptakes – by aligning global climate change with human rights and the rights of indigenous peoples. By bringing together climate change and human rights, the petition draws into play the various relational forces that shape uptakes. The petition also works to facilitate the conditions of uptake by mediating between the Inuit petitioners, the US government, and the Inter-American Commission on Human Rights.

The uptake affordances of "intersectional," global petitions and the relational forces that shape uptakes have also been affected by technology and digital media, as the next section will explore. The rise in online petitions has the potential to facilitate circulation of petitions across cultural and geographical boundaries. While such mediation reduces the possibility for direct interaction between citizens and authorities, it potentially increases the possibility for intervening in or brokering uptakes and intervening in the climate debate.

8.6 The Uptake Affordances and Constraints of Online Petitions

As we trace the historical evolution of the genre of the public petitions and the migration of petitions to online spaces, it is easy to see the potential affordances of online petitions, which have the ability to reach multiple, dispersed audiences and to mobilize broader networks of support across divides of institution, location and language. Media studies scholar danah boyd (2010) explains how the affordances of networked publics shape interactions and uptakes by making "one-to-many and many-to-many interactions far easier" (54) and by enabling people "to connect to one another across great distances" and "over extended periods" (53). The affordances of online petitions, then, are their ability to reach multiple, dispersed audiences and to mobilize broader networks of support across divides of institution, location and language.

At the time of this writing, there were multiple climate change petitions circulating online, with petitions sponsored by organizations ranging from the NRDC ("Demand the President Trump Restore America's Leadership on Climate Change"), to corporate entities, such as Ben and Jerry's ("If it's melted, it's ruined!"). Multiple climate petitions were also created on various sites such as Care2Petitions or thepetitionsite.com ("Don't Drill Off Our Coasts" and "Defend Starving Polar Bears"), Change.org ("Tell Trump to #ActonClimate"), and MoveOn.org ("We the People of the US sign on to the Paris Agreement"), some of which are sponsored by high-profile individuals, such as Bianca Jagger and Human Rights Foundation's sponsorship of "An Urgent Call to World Leaders to Prevent Catastrophic Climate Change" (Moveon.org). Stephen Hale (2010) also points to global organizations like Avaaz – meaning "voice" in several European, Middle Eastern, and Asian languages – noting that this online international campaign "has grown at incredible speed" and demonstrates promise as a

global movement seeking to break "the impasse between government, business, and individuals" (263).

To illustrate the affordances of online petitions – such as scalability – as noted by boyd above, the Avaaz petition ("Mega Climate Petition for 100% Clean World") includes links to email, Facebook, and Twitter and boasts over 3.5 million signatures worldwide. Moveon.org's "We the People of the US sign on to the Paris Agreement" – to be delivered to the US House and Senate and President Donald Trump – currently has 557,064 signatures. But while networked publics enable a greater scalability, this greater scalability can also be a constraint as questions of authenticity and credibility are raised. An article on "Authenticating Electronic Petitions" in Canada's online legal magazine, *Slaw*, further defines these constraints by posing the following questions: "But are the online petitions too easy because people can sign without much challenge, or because one can automate the signing and eliminate the people altogether? In other words, are they more likely to contain fraudulent signatures, phony names?" (Gregory, 2015, para. 6). A new system of e-petitioning used by the city government of Wellington, Australia, raises additional issues of the affordances and constraints of online petitions. While affording greater citizen engagement (the second most popular topic of petitions focused on environmental issues), the e-petition system raised questions about how representative of the electorate the e-petition users were or "the danger of the e-petition system being hijacked by a small group of political activists" (Toland, 2011, 22). The next section will take up this issue of how online petitions may call into question issues of authenticity (of both those initiating and signing the petition) and other ethical issues.

8.7 Uptake Residues and Online Petition Hoaxes

Dryer defines "uptake residues" as the intergeneric memories and habitual responses that maintain institutions and interactions (2016, 66). These routinized responses that shape our encounters with and uptakes of genre can be both enabling and limiting. Bawarshi (2016) has examined the way that uptakes, informed by rhetorical memory, can pre-condition or over-determine encounters with genres. Drawing on what, by now, is a fairly sedimented understanding of our first amendment right to petition "to seek redress of grievance," these routinized uptakes of the petition genre have been used to perpetuate misinformation about climate change and to appeal to skeptics under the guise of an appeal to authorities by concerned citizens. The petition "30,000 Scientists Reject Anthropogenic Climate Change" has been in circulation since 1998 and was shaped in response to the then Kyoto Protocol. The petition was sponsored by a group calling itself the "Oregon Institute of Science and Medicine," led by a climate change skeptic named Arthur Robinson. Robinson is a biochemist, conservative activist and four-time Republican congressional candidate in Oregon who believes human-driven climate change is a myth. The petition claims that limits

on greenhouse gases would have harmful effects and that increases in atmospheric carbon dioxide would have beneficial effects (see Figure 2).

Fig. 2: Hoax Climate Change Petition: http://www.petitionproject.org/index.php.

As of this writing, the sponsoring group claims that the petition has been signed by 31,487 American scientists, although this has never been verified and the veracity of the petition and its signers has been challenged by Politifact.com's "Punditfact," which rated the claim "Pants on Fire" (Greenberg, 2017) and has been debunked by Snopes.com, which rated the petition claims "Mostly False" (Kasprak, 2016), noting that several non-scientists have signed the petition, several names cannot be verified, and several names are of scientists in fields other than climate science. Using accompanying documents, such as a paper printed in the same typeface and format as the official *Proceedings of the National Academy of Sciences*, the petition was also made to look official, thus further drawing on uptake residues that reminded readers of credible scientific correspondences. The petition was so misleading that the National

Academy of Science issued the following clarifying statement: "The petition project was a deliberate attempt to mislead scientists and to rally them in an attempt to undermine support for the Kyoto Protocol. The petition was not based on a review of the science of global climate change, nor were its signers experts in the field of climate science" (as cited in Monbiot, 2006). While the petition seems to reflect a normalized uptake and a habitual response by signatories (similar to the rhetorical force of the "World Scientists' Warning to Humanity: A Second Notice," which also includes signatories from the scientific community), the uptake residues of the petition, in this case, are used to undercut and destabilize scientific evidence. As McCright, Dunlap and Xiao (2013) note, "an organized climate change denial movement has mobilized" over the past two decades, and it is able to challenge the scientific consensus and gains its strength, in part, "by amplifying the views of contrarian scientists and generating petitions asserting the lack of consensus" (512; see also Smart & Falconer, this volume).

While one constraint of petitioning, then, is credibility, especially of online petitions, another constraint is the potential for the petition to reach authorities and to be read and acted upon. boyd notes that "an increase in people's ability to contribute to publics does not necessarily result in the ability to achieve an audience" – or to achieve a response to the petitions. The rhetorical exigency of the petition – of seeking redress from the government regarding grievances – is challenged by what a *Northwestern University Law Review* article refers to as "downsizing the right to petition," which points out that while we have a constitutional right to petition, there is "not an assurance that communications will receive any particular reception or achieve any particular result" (Lawson & Seidman, 1999, 2). Richard Hough (2012), in his study of the petition systems of the Australian House of Representatives, the Canadian House of Commons, the German *Bundestag*, the Scottish Parliament, the UK House of Commons, and the National Assembly for Wales, characterizes the lack of response to petitions as "a parliamentary black hole" (480), although he notes that the ability of petitions to affect policy change varies from legislature to legislature. With the move toward governmental systems of e-petitioning, the challenge in receiving a response is even greater. For example, the UK House of Commons instituted a threshold number of signatures required for a government response to citizen petitions, with a "100,000-signature threshold making an e-petition eligible for a Commons debate" (BBC, 2012). This is the same threshold that was established for the White House petition site "We the People" established by the Obama administration (https://petitions.whitehouse.gov/); however, "the White House has not responded to a petition since Trump took office" (Rosenberg, 2018). Given these affordances and constraints of online petitioning and questions about their efficacy, how can petitions be taken up as tools of mobilization by citizens, and how can they be taken up by authorities who act on and respond to the petition? The uptake enactment of petitions, or response to uptake affordances, will be examined in the next section. We will also examine how, even though petitions might no longer have the rhetorical force

they once had, they can still be used to direct the climate change debate in ways that might not be in the form of direct action. That is, while we might not see the uptake artifact and enactment of petitions, we can still see affordances and captures and maybe even residues that are actions in the making.

8.8 Petitions and Uptake Enactments

This section will focus on uptake enactments of climate change petitions – how they are taken up as tools of mobilization by citizen petitioners and how they are taken up by authorities who act on the petition – and the ways in which public petitions are affected by digital networks that influence the circulation of petitions and their intervention in civic actions. When comparing historical cases of petitioning rooted in the material and physical gathering of petitioners (such as petitions circulated in 19th century women's sewing circles or prerevolutionary petitions hand delivered to the king) to more contemporary online petitions (such as emailed petitions from an online advocacy group like MoveOn.org), there's an obvious shift in the tactical dimensions of the interchange as the sequence of uptakes becomes further removed and increasingly mediated, and there are constraints or limits to political efficacy in digital sites. With online petitions, issues are mobilized across routes of production, circulation, and reception but stop short of execution of action and social change, which is where criticisms of online petitions – as a form of "slactivism" – come in. Howard Rheingold has argued that electronic petitions give people "the illusion that they're participating in some meaningful political action" (cited in Regan, 2002, n.p.) as they quickly sign a petition but then fail to take further action. Just a brief search of online petitions will yield multiple articles with titles such as "Do Online Petitions ever Accomplish Anything?" or "Does Change.org really change anything?" In an ABC Australia article titled "Online Petitions: Do They Have Any Effect?" a university political science lecturer, Dr. Ian Cook, notes, "Just getting a whole bunch of people's signatures and addresses won't in itself have any effect, you have got to add to it in terms of adding some political pressure" (as cited in Wynne, 2016).

A case in point is a recent Move.on petition to sign onto the Paris climate agreement (see Figure 3), which reached over a half million signatures from across the US (and from Canada). The petition notes that it is "To be delivered to The United States House of Representatives, The United States Senate, and President Donald Trump," and MoveOn.org notes that they will deliver signatures for approved petitions by email to governors, Congress, and state legislators. "However," they say, "we strongly recommend that you deliver your petition in person to have the maximum impact and ensure that it is seen by your target." Because the online affordances help mobilize knowledge and mobilize support but don't seem to extend to social action, Move.on recommends actions that facilitate uptake enactments, primarily strategies of uptake capture or producing consequences through embodied or affective uptakes. At the end

of the process of organizing an online petition, Move.on suggests that to deliver the online petition, you should download it and organize a face to face meeting: **"**There's often no substitute for sitting down and having a conversation with the person you're trying to persuade with your petition. By organizing a meeting, you can present your concerns in greater detail and engage in a back-and-forth discussion about possible solutions. And you'll be 100% sure that they saw the petition!"

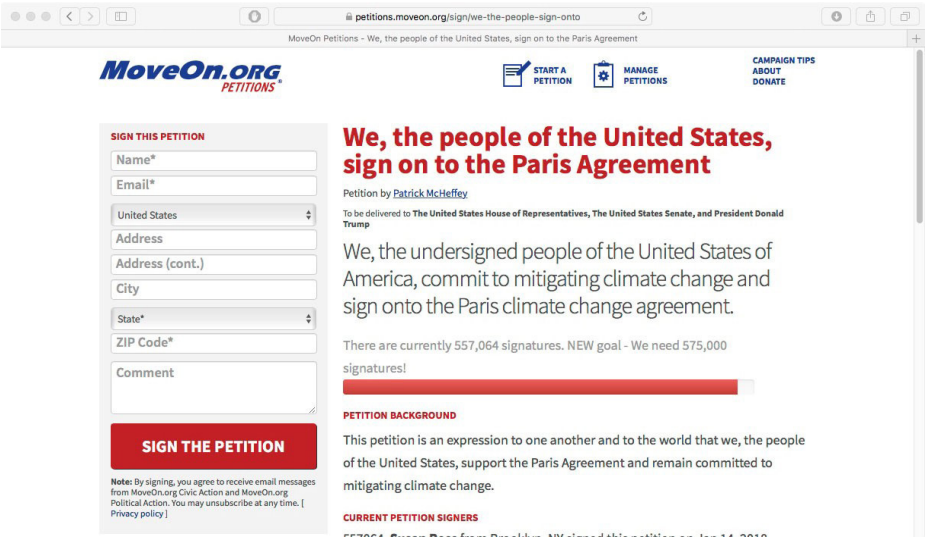

Fig. 3: Moveon.org Petition: https://petitions.moveon.org/sign/we-the-people-sign-onto.

Actions that further facilitate uptake enactments – and that shape the dispositional, affective and cognitive consequences of uptake capture – consist of "birddogging your target" or approaching your target at a public event or fundraiser (which bears a striking resemblance to the previously described embodied techniques of petitioners in pre-revolutionary England who physically presented their petitions); "simple drop off" of petitions; or "organizing a news conference or rally (which also has historical precedence of organized marches or rallies to present thousands of print petitions). In addition, Moveon.org notes the role of "uptake artifacts" or another genre or text produced in response to other texts. Their site includes "meta-genres" (Giltrow, 2002) or genres that provide guidance in how to produce and negotiate genres and genre uptakes of petitions – that is, tactics for engaging petition signers or for mediating uptakes. These "uptake artifacts" include 1) an email to petition signers to keep them updated on the campaign; 2) a phone call to decision makers; 3) letters to the editor; and 4) flyering events (handing out flyers to invite people to join your petition campaign). The uptake enactment or response to a petition, then, seems to depend on the

uptakes happening in-between and around the genre. These moments of interaction don't just mobilize petitions but also create affordances for uptake capture, for "lingering effects" that may lead to uptake enactment. Such proto and interstitial actions can play an occluded but powerful role in directing (and redirecting) climate change action.

8.9 Uptake Enactments: Mobilizing Uptakes, Localizing Uptakes

How, then, might climate change petitions work to mobilize action on climate change? Political scientist Daniel Carpenter has argued that the rhetorical force of petitions lies not in the response from authorities – the redress of grievances – but in their networking potential, noting that the list of signatories is "a rich political resource" and that in addition to identifying individuals sympathetic to its declaration, the petition and list of signatories "locate individuals in a social structure" (2003, 1). As Carpenter and others have argued, it is worth considering whether the most important readers of a petition are not its recipients but its signatories. The most important function of a petition may not be that it reaches its designated audience but that, in the process, it helps to build discursive networks of affiliation and exchange among political organizers – that it plays a role in coordinating uptakes and coordinating actions that lead to uptake enactments.

The creator of thePetitionsite.com, Randy Paynter, would agree, and in response to charges that online petitions are a form of slactivism, he argues that "Internet petitions are effectively a 'gateway drug' to more civic engagement" (2010, n.p.). Signing a public petition is a public announcement of citizens' support for a cause, "so simple actions that demonstrate that we care about, say the environment, lead to future actions to support the environment (through donations, voting, purchases, discussions with friends, etc.)." Paynter describes the myriad and multi-directional uptakes of petitions: "Sometimes petitions are major factors in a big decision, sometimes they're the triggers that alert international media to hot stories, sometimes they simply raise general awareness of an issue, act as catalysts for fundraising, or compel other power brokers to get involved" (2010, n.p.). Climate change petitions, then, might act as the "gateway drug" to more transformative action on climate change. As part of this mobilization process, participants in local publics, such as academics, might also play a role in mobilizing action on issues like climate change that affect a larger public. While academics might not consider themselves "power brokers" by any means, Audrey Williams June (2017), in an article in *The Chronicle of Higher Education*, weighs in on the political efficacy (or uptake enactment) of petitions, noting that while petition use has become more prevalent among faculty who "have sounded off on issues like climate change, academic freedom, and the rights of transgender people.... It's not clear whether petitions signed by academics have more heft than others or if they have much of an effect at all. Recent efforts suggest that those that

apply directly to academe seem to be more successful than those that opine on things far from campus" (n.p.). The article goes on to examine petitions that received a sizable number of signatures and their outcomes (or uptake enactments), and it's clear that more localized efforts – for example, to change the name of Yale University's Calhoun College (named after an advocate of slavery) or to reinstate two faculty members who had been fired from Mount St. Mary's University – were more successful in producing a response than more dispersed, national efforts (for example, a petition to intervene and stop Jeff Sessions from being confirmed as Attorney General).

The importance of localized efforts also seems to be driving recent climate change activism and petition drives, with a series of petitions by Moveon.org to "Urge your Governor to Support the Paris Climate Agreement" (See Figure 4). The main petition site notes that, in response to Trump pulling out of the Paris Climate Agreement, "governors from California, New York, and Washington launched the US Climate Alliance, a coalition committed to the carbon reduction efforts called for under the Paris Agreement. So far, 14 states and Puerto Rico have joined the US Climate Alliance. Now, MoveOn members across the country are petitioning their states to join them." Individuals are asked to click on the map to join a petition drive in their state, with the petition gathering signatures of residents of the state and sending the petition to the state governor, thus making the uptake less dispersed and less distant and perhaps strengthening the possibility of uptake enactment and mobilizing a response to climate change.

Fig. 4: Moveon.org: https://front.moveon.org/urge-your-governor-to-support-the-paris-climate-agreement/#.WlvssktG1E5.

8.10 Conclusion

Recognizing the urgency to act – and noting that "humanity is not taking the urgent steps needed to safeguard our imperiled biosphere" (Ripple et al., 2017, 1026) – the authors and signatories of the Second Notice warning to humanity indicate how this urgency might translate to action:

> As most political leaders respond to pressure, scientists, media influencers, and lay citizens must insist that their governments take immediate action as a moral imperative to current and future generations of human and other life. With a groundswell of organized grassroots efforts, dogged opposition can be overcome and political leaders compelled to do the right thing. (Ripple et al., 2017, 1026)

The authors describe the role citizens must play in motivating their governments to take action through grassroots efforts, efforts that petitions and other genres can help to mobilize. But as our chapter's analysis has hopefully illustrated, the mobilization of scientific knowledge into action requires not just genre work but *uptake work*. It requires paying attention to the pathways drawn and relations held between genres that make movements and translations of knowledge across genres possible. By focusing on the seams that hold between genres, we can both better understand what makes certain uptake selections (and not others) possible and more effectively intervene in, broker, and sponsor these uptake selections.

Historically, petitions have been uniquely positioned to generate and mobilize a groundswell of grassroots efforts, yet our examination of petitions (and their uptakes) as complex sites of transaction also draws attention to the mobilizations and actions that may happen along the pathway to uptake and social action – what we described as mobilizations in process. That is, petitions can help us trace what Deleuze and Guattari (1987) call "directions in motion" (21) as the act of petitioning, signing petitions, and distributing them can intervene in, direct, and re-direct uptakes. As we hope our chapter has demonstrated, recognizing the complex uptakes surrounding petitioning reveals how genres can be used to intervene in and redirect climate change action.

As Devitt (this volume) argues, "genres work *for* social action rather than only *as* social actions when people act through them deliberately, consciously, and toward desired ends. Genres always already are social actions … But critical awareness of those social actions can transform everyday social actions that get things done in the world into powerful actions with social and political purpose, actions meant to alter the world in meaningful and even structural ways" (add page #). As we seek to understand how public genres, like petitions, act in the world – and to understand how public petitions might lead to greater awareness and action on climate change – it is helpful then to examine not only uptake enactment (the result of genre action) but also the social, affective, and material interactions that happen around and in between genres and that limit or enable genre action. A better understanding of the

complexity of uptakes – and their complex scene of agency – can help us understand that taking up the affordances of a petition by circulating or signing a petition on climate change is not enough and is just a step – or one uptake pathway – in facilitating action through uptake artifacts (follow-up emails, phone calls to leaders, letters to the editor, flyering events) or uptake capture (organizing face to face delivery, bird-dogging the target of the petition, organizing a rally or march to present a petition). We might also consider how localized or place-based uptakes might be more effective in bringing about change in climate debates and action, as we consider a vision of genre as [social] *movement* – "interrelationships drawing together configurations of conventions into (perceived) recurrence in particular *places and times*" (Dryer, 2016, 61). If a petition is a tool of mobilization, then it can mobilize climate change action in multiple and different directions, from raising awareness of issues, to helping organizations fundraise, to drawing media attention, to drawing the attention of the authorities it seeks to persuade. Understanding these multiple uptake pathways and uptake enactments can help us construct uptake-enactment strategies that can "turn accumulated knowledge into action" and can lead to genres for social action and change.

References

Alliance of World Scientists (2017). Retrieved from http://scientistswarning.forestry.oregonstate.edu

Auken, S. (2015a). Genre and interpretation. In S. Auken, P.S. Lauridsen, & A.J. Rasmussen (Eds.), *Genre and …* (154–183). Copenhagen: Ekbátana (Copenhagen Studies in Genre; vol. 2).

Auken, S. (2015b). Utterance and function in genre studies: A literary perspective. In J. Andersen (Ed.), *Genre theory in information studies* (155–78). Bingley: Emerald Group Publishing Limited. doi:10.1108/S2055-537720140000011009.

Auken, S. (2018). Understanding genre. *Journal of Zhejiang International Studies University, 2*, 14–27.

Austin, J.L. (1962). *How to do things with words*. Oxford: Oxford University Press.

Bailey, R.C. (1979). *Popular influence upon public policy: Petitioning in eighteenth-century Virginia*. Westport, CT: Greenwood.

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham: Duke University Press.

Bawarshi, A. (2016). Between genres: Uptake, memory, and US public discourse on Israel-Palestine. In M.J. Reiff & A. Bawarshi (Eds.), *Genre and the performance of publics* (43–59). Logan: Utah State University Press. doi:10.7330/9781607324430.c002.

Bawarshi, A., & Reiff, M.J. (Eds.) (2010). *Genre: An introduction to history, theory, research, and pedagogy*. West Lafayette, IN: Parlor Press.

BBC (2012, September 13). More e-petitions to receive government responses. Retrieved from https://www.bbc.com/news/uk-politics-19583777.

boyd, d. (2010). Social network sites as networked publics: Affordances, dynamics, and implications. In Z. Papacharissi (Ed.), *A networked self: identity, community, and culture on social network sites* (39–58). New York: Routledge.

Carpenter, D. (2003). The petition as a tool of recruitment: Evidence from the Abolitionist Congressional Campaign. Prepared for presentation at the Crafting and Operating Institutions

Conference at Yale University, 1–36. Retrieved from https://petitions.radcliffe.harvard.edu/files/petitions/files/petition-recruit-20040112.pdf.

Chen, J. (2016). *Useful complaints: How petitions assist decentralized authoritarianism in China*. London: Lexington Books.

Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia* (Brian Massumi, Trans.). Minneapolis, MN: University of Minnesota Press.

Devitt, A.J. (2018). Genre *for* social action: Transforming worlds through genre awareness and action. This publication.

Dryer, D. (2016). Disambiguating uptake: Toward a tactical research agenda on citizens' writing. In M.J. Reiff & A. Bawarshi (Eds.), *Genre and the performance of publics* (60–79). Logan: Utah State University Press. doi:10.7330/9781607324430.c003.

Dryer, D. (2008). Taking up space: Genre systems as geographies of the possible. *JAC: Rhetoric, Writing, Culture, Politics*, *28*(3/4), 505–34.

Dunlap, R.E. (2013). Climate change skepticism and denial: An introduction. *American Behavioral Scientist*, *57*, 691–698. doi:10.1177/0002764213477097.

Freadman, A. (1994). Anyone for tennis? In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (43–66). London: Taylor & Francis.

Freadman, A. (2002). Uptake. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (39–53). Cresskill: Hampton Press.

Freadman, A. (2004). *The machinery of talk: Charles Peirce and the sign hypothesis*. Stanford: Stanford University Press.

Freadman, A. (2012). The trap and trappings of genre theory. *Applied Linguistics*, *33*(5), 544–63. doi:10.1093/applin/ams050.

Freadman, A. (2014). Where is the subject? Rhetorical genre theory and the question of the writer. *Journal of Academic Language and Learning*, *8*(3), A1–11.

Freedman, A., & Medway, P. (Eds.) (1994). *Genre and the new rhetoric*. London: Taylor & Francis.

Giltrow, J. (2002). Meta-genre. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre* (187–205). Cresskill: Hampton Press.

Gramsci, A. (1971). *Selections from the prison notebooks*. (Q. Hoare & G. Nowell Smith, Trans). London: Lawrence and Wishart.

Graubart, J. (2008). *Legalizing transnational activism: The struggle to gain social change from NAFTA's citizen petitions*. University Park, PA: The Pennsylvania State University Press.

Greenberg, J. (2017, September 8). No, 30,000 scientists have not said climate change is a hoax. *Politifact*. Retrieved from http://www.politifact.com/punditfact/statements/2017/sep/08/blog-posting/no-30000-scientists-have-not-said-climate-change-h/.

Gregory, J. (2015, June 23). Authenticating electronic petitions. *Slaw: Canada's Online Legal Magazine*. Retrieved from http://www.slaw.ca/2015/06/23/authenticating-electronic-petitions/

Hale, S. (2010). The new politics of climate change: Why we are failing and how we will succeed. *Environmental Politics*, *19*(2), 255–275. doi:10.1080/09644010903576900.

Hamilton, C. (2010). *Requiem for a species: Why we resist the truth about climate change*. Crows Nest, New South Wales, Australia: Allen & Unwin.

Hough, R. (2012). Do legislative petition systems enhance the relationship between parliament and citizen? *The Journal of Legislative Studies*, *18*(3-4), 479–495. doi:10.1080/13572334.2012.706057.

Jacques, P.J. (2006). The rearguard of modernity: Environmental skepticism as a struggle of citizenship. *Global Environmental Politics*, *6*, 76–101. doi:10.1162/glep.2006.6.1.76.

June, A.W. (2017). Through petitions, professors exercise a special duty to speak out. *The Chronicle of Higher Education*, *63*(27). Retrieved from https://www.chronicle.com/article/Through-Petitions-Professors/239334.

Kasprak, A. (2016). Not all climatologists. *Snopes*. Retrieved from https://www.snopes.com/fact-check/30000-scientists-reject-climate-change/.

Kelly, B. (2011). *Petitions, litigation, and social control in Roman Egypt*. Oxford: Oxford University Press.

Lawson, G., & Seidman, G. (1999). Downsizing the right to petition. *Northwestern University Law Review*, *93*(3), 1–27.

Maier, P. (1991). *From resistance to revolution: Colonial radicals and the development of American opposition to Britain, 1765–1776*. New York, NY: Norton.

McCright, A.M., Dunlap, R.E, & Xiao, C. (2013). Perceived scientific agreement and support for government action on climate change in the USA. *Climatic Change*, *119*, 511–518.

Miller, W.L. (1995). *Arguing about slavery: John Quincy Adams and the Great Battle in the United States Congress*. New York, NY: Vintage.

Monbiot, G. (2006, September 19). The denial industry. *The Guardian*. Retrieved from https://www.theguardian.com/environment/2006/sep/19/ethicalliving.g2.

Osofsky, H.M. (2007). The Inuit petition as a bridge? Beyond dialectics of climate change and Indigenous peoples' rights. *American Indian Law Review*, *31*(2), 675–697. doi:10.2307/20070803.

Paynter, R. (2010, April 28). Slacktivism: Why snopes got it wrong about internet petitions. *Care2.com*. Retrieved from http://www.care2services.com/care2blog/slacktivism-why-snopes-got-it-wrong-about-internet-petitions.

Portnoy, A. (2005). *Their right to speak: Women's activism in the Indian and slave debates*. Cambridge, MA: Harvard University Press.

Regan, M.P. (2002). Online activism _ a lot more than just petitions. Retrieved from http://www.greenday.net/activism.html.

Reiff, M.J. (2016). Geographies of public genres: Navigating rhetorical and material relations of the public petition. In M.J. Reiff & A. Bawarshi (Eds.), *Genre and the performance of publics* (100–116). Logan: Utah State University Press. doi:10.7330/9781607324430.c005.

Ripple, W.J., Wolf, C., Newsome, T.M., Galetti, M., Alamgir, M., Crist, E., Mahmoud, M.I., & Laurance, W.F. (2017). World scientists' warning to humanity: A second notice. *BioScience*, *67*(12), 1026–1028. doi:10.1093/biosci/bix125.

Rosenberg, E. (2018, February 1). The White House has finally restored a petitions site that is critical of President Trump. *The Washington Post*. Retrieved from https://www.washingtonpost.com/news/the-fix/wp/2018/01/31/the-white-house-promised-to-restore-a-petitions-site-that-was-critical-of-trump-it-hasnt/?utm_term=.8927100fbb46.

ScienceDaily (2017, August 15). Understanding alternative reasons for denying climate change could help bridge divide. *ScienceDaily*. Retrieved from https://www.sciencedaily.com/releases/2017/08/170815095049.htm.

Swales, J.M. (1990). *Genre analysis: English in academic and research settings*. Cambridge: Cambridge University Press.

Swales, J.M. (2004). *Research genres: Explorations and applications*. Cambridge: Cambridge University Press.

Tachino, T. (2012). Theorizing uptake and knowledge mobilization: A case for intermediary genre. *Written Communication*, *29*, 455–476. doi:10.1177/0741088312457908.

Tachino, T. (2016). Multiple intertextual threads and (un)likely uptakes: An analysis of a Canadian public inquiry. In M.J. Reiff & A. Bawarshi (Eds.), *Genre and the performance of publics* (178–198). Logan: Utah State University Press. doi:10.7330/9781607324430.c009.

Thieme, K. (2006). Uptake and genre: The Canadian reception of suffrage militancy. *Women's Studies International Forum*, *29*, 279–288. doi:10.1016/j.wsif.2006.04.007.

Thompson, M. (2003). Cultural theory, climate change and clumsiness. *Economic and Political Weekly*, *38*, 5107–5112.

Toland, J. (2011). E-petitions in local government: the case of Wellington city council. *International Reports on Socio-Informatics*, *8*(2), 15–22.

Van Rensburg, W., & Head, B.W. (2017). Climate change scepticism: Reconsidering how to respond to core criticisms of climate science and policy. *Sage Open*, *7*(4), 1–11. doi:10.1177/2158244017748983.

Van Voss, L.H. (2001). *Petitions in social history*. Cambridge: University of Cambridge Press.

Whitmarsh, L. (2011). Scepticism and uncertainty about climate change: Dimensions, determinants and change over time. *Global Environmental Change*, *21*, 690–700. doi:10.1016/j.gloenvcha.2011.01.016.

Wynne, E. (2016, December 15). Online petitions: Do they have any effect? *ABC Radio Perth*. Retrieved from http://www.abc.net.au/news/2016-12-15/are-online-petitions-ever-effective/8124388.

Zaeske, S. (2003). *Signatures of citizenship: Petitioning, antislavery, and women's political identity*. Chapel Hill: University of North Carolina Press.

Zaret, D. (2000). *Origins of democratic culture: Printing, petitions, and the public sphere in early-modern England*. Princeton, NJ: Princeton University Press.

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9 Rogue Rhetorical Actors: Scientists and the Social Action of Tweeting

Abstract: This chapter provides a case study of scientists on Twitter as a way to examine how well-intentioned and rhetorically-reasonable responses to a rhetorical situation can be confused by multiple intersecting, constantly unfolding, and often conflating rhetorical situations, genre users, and genres. The case explores conversations that erupted after several federal science-related agencies in the United States received a gag order. Resisting such silencing, several "rogue" or "alternative government" accounts appeared on Twitter, and those accounts began sharing information about climate change. More broadly, these accounts entered a political debate, taking a position on the perceived political moment. We also uncover challenges to how we theorize about genre as we move from well-established genres of science communication to public or vernacular genres. Genre theory can help us understand how what appear to be reasonable rhetorical strategies may in fact serve to undermine one's argument. In the case of tweeting scientists, we suggest that scientists deploy typified responses to share science or defend science, but the rhetorical situation that opponents respond to is one designed to generate uncertainty in science, in the authorities or experts that report science to us, and in the very institutions that support their research.

9.1 Introduction

Rhetorical genre theory provides an important tool for understanding the possibilities for rhetorical response and, thus, social action (Miller, 1984). Often rhetorical genre theorists chart how genres shape particular responses to a rhetorical situation, describing not only form and rhetorical conditions for a genre's use, but also the norms and values that genres embody. Understanding the norms and values that genres mark is important because they provide insight into the motivation of genre users. Commonly genre theorists examine those genres that are relatively stabilized (Schryer, 1993) and that are embedded in professional communities. When studying well-stabilized, professional genres, understanding the norms and values of a genre can tell us something of the broader community of genre users. For example, when we investigate genres of science, we can learn something about the norms of science as a profession and the values that scientists hold, such as objectivity in research by the way that scientific research articles are crafted (Bazerman, 1988). Recently, however, genre theorists have also turned their attention to what Miller (2017) has called "vernacular genres," those that take place in public discourse (see, leading these efforts,

Reiff & Barwarshi, 2016). Such work is an important area for genre scholarship, and pushes further how we characterize genre knowledge, interpretation, and use. Somewhere between those professional and vernacular genres, there are genres that operate in both spheres of discourse simultaneously, and this is particularly true in the case of scientific discourse in new media environments (Kelly & Miller, 2016). In this chapter, we investigate one example of where professional spheres of discourse meet public spheres of discourse online. Specifically, we look to climate change discourse on the microblogging platform Twitter. Climate change has become a highly politicized issue (see PEW, 2016a), and while the science has largely agreed upon its cause, the public debate about anthropogenic climate change continues. Scientists continue to weigh in on the public debate, trying to clear up misconceptions or explain the science, but the debate remains fraught. Choosing a specific site to explore how these discourses are enacted is important because, across a variety of media, we are certain to find different forms of public debate about climate change. For example, some public debates may centre on whether or not anthropogenic climate change is occurring at all, whereas others may focus on what needs to be done in response to the pending consequences of climate change. Other public debates might even engage with scientific discourse about climate change.

Our case in this chapter, too, involves a situation where scientists, publics, and policy makers engage in conversation about climate change. The case explores a particular thread of the conversation that erupted after several federal agencies in the United States received a gag order. Resisting such silencing, several "rogue" or "alternative government" accounts appeared on Twitter,[1] and those accounts began sharing information about climate change. More broadly, these accounts entered a political debate, taking a position on the perceived political moment.[2]

But the story that follows, from the activities of scientists to the public debates and media coverage that came after, reveal a complicated landscape for communication of climate change research. Online debate about climate change would be too simple a description of what is occurring. Debates about climate change suggest more interplay between what Smart (2016) has usefully characterized as discourse coalitions of Advocates and Skeptics. Smart defines a discourse coalition as "a cluster of social actors – individuals, organizations, institutions – who, within the context of

1 Although Facebook retains the largest share of online users (68% as of January 2018), some 24% of global online users are on Twitter, with 21% of online American users on the site, and among the American sample, users are younger, educated, and the platform is also popular among those with high incomes (PEW, 2016b, 2017, 2018).

2 Mellon and Prosser's (2017) study of British online users found that social media users' demographics tend to signal certain characteristics of their political leanings, notably they are more liberal, more politically aware, although less active insomuch as they are less likely to vote than their offline counterparts. Most significantly, what we know about social media users is that they depart from the broader public in terms of political engagement (Mellon & Prosser, 2017, 3).

a major social debate, are attracted to a common set of arguments" (Smart, 2016, 4). Importantly, a particular discourse coalition is defined by its opposition in an effort to achieve "discursive hegemony" (4). No doubt, these discourse coalitions remain active and engaged (see Smart & Falconer, this volume), but climate change is also metonymic to a broader social debate. The climate change debate is a partisan issue in the United States and in many other countries, and the lines drawn are not particularly attendant to climate *sciences* – that is, its epistemological grounding, or, even, its axiological commitments – but instead focus on climate science as a locus of tension between partisan norms and values. Disentangling the debates that scientists are having from partisan political debates is important because they mark different rhetorical situations. Because the rhetorical situations to which these parties respond are different, the genres they use to respond to these situations necessarily differ, too. As Smart (2016) argues, the discourse coalitions in the texts surrounding the climate change debate appear to offer incommensurate views of climate change knowledge and science (14).

What we are suggesting is that this is due, in part, to the seemingly similar genres and genre sets that each coalition invokes to respond to markedly different rhetorical situations. Moreover, we suggest it is not always clear when there are multiple rhetorical situations and multiple typified responses because they may appear similar while serving different social actions. Although scientists are fighting back against false claims about the science of climate change on Twitter, showing that they are indeed rhetorically savvy in new media environments, they also appear to rely too deeply on a sincere belief about the commitment to authenticity of deliberation in this space. Where the genres deployed by scientists on Twitter to fight back were designed to establish the preeminence of science over partisan politics, an inversion occurred, and the genre activities now function as a tool of partisan resistance, with science subsumed into the political melee.

In brief, we examine this case of scientists on Twitter as a way to examine how seemingly well-intentioned and rhetorically-reasonable responses to a rhetorical situation can be confused by multiple intersecting, constantly unfolding, and often conflating rhetorical situations, genre users, and genres. Along the way, we also uncover some challenges to how we theorize about genre as we move from well-established genres of science communication to public or vernacular genres. Genre theory can help us understand how what appear to be reasonable rhetorical strategies may in fact serve to undermine one's argument. In the case of tweeting scientists, we suggest that scientists deploy typified responses to share science or defend science, but the rhetorical situation that opponents respond to is one designed to generate uncertainty in science, in the authorities or experts that report science to us, and in the very institutions that support their research. Our genres for communicating research, including climate change research, must then better attend to the complexity of the discourse spaces we are entering by returning to that old question of the rhetorical situation – or situations.

9.2 Genre, New Media, and Muddled Arguments

Rhetorical genre scholars have been studying new media forms and their effect on genres for several decades now. Consider Yates and Orlikowski's (1992) important contribution theorizing genres of organizational communication, integrating genre into organizational communication studies as a concept to assist in understanding structuration processes (see, on structuration theory, Giddens, 1984). Although they acknowledge the role of new media forms, it is useful to remember that, still, genres are "enacted through rules" and that the "ways in which these genre rules influence the generation of specific communication is central to an understanding of genre as enacted within communities" (Yates & Orlikowski, 1992, 392). Those rules include social and professional norms, as well as being "standardized by being embedded in a medium" (392). All of this is reasonably well ordered, and we can see how it is distinct from vernacular spheres and new media forms. Reiff and Bawarshi's (2016) call to attend to public genres is an important contribution to genre studies, urging genre scholars to look beyond professional discourse spheres to the rich vernacular spheres of discourse that many of us inhabit every day. As new media environments unfolding online create opportunities for new forms of engagement, particularly across different spheres of discourse, it becomes increasingly important to attend to how vernacular genres operate differently than professional genres. Genre theorists have indeed begun to investigate the manner in which new media in our complex web-based ecologies might shape genres or genre (e.g., Andersen & van Leeuwen, 2017; Caple & Knox, 2017; Lewis, 2016; Miller & Shepherd, 2004, 2009; Pflugfelder, 2017; Sherlock, 2009; Smart, 2016; Wickman, 2016; Zappavigna & Zhao, 2017; see also two volumes: Giltrow & Stein, 2009; Miller & Kelly, 2017).

What is illustrative in efforts to map emerging genres in new media environments is both the rapid evolution of those genres as well as how the genre users put the new media affordances and typifications to work for their particular purposes. Further, these new media environments encompass both professional discourses as well as vernacular discourses. In the latter case, digital, web-based new media provide an important case for investigation because these spaces reconfigure social interactions. As Andersen (2016) explains, "we, as members of the public, audiences, citizens, private persons, searchers, or users are confronted with structured collections of items in a more direct way than we may be used to because one means of communication employed by society's social and cultural institutions is digital networked media and their affordances" (n.p.). Rapid interplay of uptakes across discourse communities creates interesting problems for how we theorize web-based new media genres as well as how we enact them *for* social action, following Devitt's call in this volume.

But we wish to raise here the question of how to explore genres *for* social action (following Devitt) in discourses and media spaces where heterogeneous audiences and complex information environments shape and are shaped by rapidly evolving technologies and norms. Put simply, how does one assess the situation to which

they intend to respond when the situation itself is changing, along with most of the other variables in the constellation that forms a genre? Although genre theorists have attended to these questions, we wish to add another layer in our analysis, which is how to respond if the conditions of discourse are not clear or entirely honest. To better explain what we mean, we turn to rhetorical scholar Leah Ceccarelli's (2011) recent work on manufactured scientific controversies, which has important implications for how we theorize communication of climate change research (see, also, Oreskes, 2010; Supran & Oreskes, 2017). Chiefly, Ceccarelli's study of several cases where "scientific debate" was intentionally manufactured for political ends, intentionally misleading broader publics about the state of consensus among scientists about current research. "A scientific controversy is 'manufactured' in the public sphere," Ceccarelli explains, "when an arguer announces that there is an ongoing scientific debate in the technical sphere about a matter for which there is actually an overwhelming scientific consensus" (196). Continuing, she writes, "manufactured scientific controversy can be seen as a special type of 'public scientific controversy' in which 'strategically distorted communication' works to corrode the democratic process" (196) and, we might add, the scientific process of knowledge making and shared understanding. Climate change is among the cases she explores, recounting Frank Luntz's 2002 memo in the United States that helped change strategies around climate change discourse to sow dissent. In that memo, Luntz put it quite simply: "Voters believe that there is no consensus about global warming within the scientific community. Should the public come to believe that the scientific issues are settled, their views about global warming will change accordingly" (qtd. in Burkeman, 2003). The takeaway is that because of strategic efforts what was once a technical debate among experts was moved into an open, public debate, where all citizens have a stake and a voice, and, it follows, a framing of any attempt to argue with the public's right to engage in the debate as "elitist and antidemocratic" (Ceccarelli, 2011, 208).

Manufactured scientific controversies have important implications for how we understand the communication of research as it moves across the spectrum of genres from professional or expert genres to public or non-expert genres. Smart's (2016) work on discourse coalitions in climate change research blogs explores a debate that has been designed to result in, as he found, necessarily incommensurate beliefs about the research because the discourse coalitions are in fact arguing for broader claims than the particular research findings themselves. Thus, some arguments are about scientific epistemology and others forward axiological claims.

Indeed, moving the debate to new genres allows for the debate itself to be moved. In the pages of research articles, scientists debate with a set of norms and conventions rooted in their particular disciplinary homes and in scientific discourse in general. In these pages, debates are not large-scale ideological issues but, rather, specific aspects of a scientific problem. Meta-studies or review articles reporting on consensus of these papers, too, adhere to the norms of disciplines, including how the findings are assessed and how they contribute toward a common understanding for the particular

scientific community. Such work represents a complex assessment of data specific to particular scientific questions. Consensus among scientists that climate change is indeed happening and has anthropogenic causes comes from immersion in one's own field, reviewing the evidence and arguments within a scientific framework, and from broader engagement in the multidisciplinary climate research community (Oreskes, 2004). Genres used in the internal communication of climate research among scientists necessarily serve different functions and purposes than more public genres. Specifically, the professional genres used to communicate climate science among climate researchers are designed for assessing, understanding, and vetting research.

Public genres serve different purposes, and, further, afford the possibility of reformulating the argument. Fahnestock's (1986) *Accommodating Science* makes this point well, detailing how arguments in public genres may take a different form to address the interest and needs of the audience. For example, a research article will have a specific argument crafted for a disciplinary conversation, but as that research moves into more public, non-expert domains, the argument might move from an appeal to producing disciplinary knowledge to an appeal to the wonder of the research itself. Normally, we might see this kind of reformulation as an important step toward connecting with a different audience which, presumably, has their own interests and should indeed be accommodated by thoughtful communicators attempting to share complex knowledge with broader publics. However, after Ceccarelli's work on manufactured controversies, it is not difficult to see how this movement across genres affords a moment where research can be intentionally distorted. For example, this movement across genres often requires change in how an argument is made or even a change in the argument itself, as Fahnestock's examples of accommodated science demonstrate. Indeed, such a movement could even divert the argument from epistemological claims about research findings to axiological claims only superficially related to the science. Even minor changes to an argument, such as emphasizing the funding support for a research study, can shift the framing of the argument from a question of science to questions about, for instance, financial influence. Practically, the consequences of such genre movement are highly significant to how we communicate climate change research.

Determining when these changes to argument have occurred is challenging because we bring to bear our own understandings of genre and frames of reference to assess and interpret the rhetorical situation we are encountering. Genre studies acknowledge that genres play a regulative function, shaping how we understand text in context, and that regulative function affects how we interpret a situation. Auken (2015) examines the too often overlooked aspects of genre interpretation, including genres' regulative function, which he notes is fragile, saying that "regulations imposed by genre can be broken at a moment's notice or made the subject of manipulation or interpretation" (159). One outcome of this "break" is that a new genre may "move into … an entirely different genre" (159). Auken's account explains the central role of expectations in recognizing genres, from rather simple to more complex cases.

We wish to focus on those moments when interpretation of genre, and the commonly tacit assessments made, fail as genre users move and are moved into a new genre space. To illustrate our argument, we now turn to recent efforts to communicate about climate change research online using the social media platform Twitter.

9.3 AltGov Twitter and Resistance Genre Work

It was shortly after the inauguration of the 45th President of the United States that the climate change page on WhiteHouse.gov was removed, and days later the US Environmental Protection Agency was instructed to remove their page on climate change (Davenport, 2017). Then, following the 45th POTUS's claim that his audience was the largest on record, The National Parks Service tweeted comparative photos of the 44th and 45th POTUS' inauguration audiences. During this time, much concern and debate surrounding the new administration's plans for science-focused agencies and science funding circulated. Web pages related to climate change were taken down, and concerned scientists wondered what the meaning of these actions might be. Soon after a gag order was applied to numerous US agencies that operate under the Department of Interior (Revesz, 2017). Amidst concerns about silencing the National Parks Services, an unlikely source, began tweeting climate change facts. South Dakota's Badlands National Park used their Twitter presence (@BadlandsNPS) as a site of protest with a series of messages sharing facts about anthropogenic climate change: "'The pre-industrial concentration of carbon dioxide in the atmosphere was 280 parts per million (ppm). As of December 2016, 404.93 ppm'," "Today, the amount of carbon dioxide in the atmosphere is higher than at any time in the last 650,000 years. #climate," "Flipside of the atmosphere; ocean acidity has increased 30% since the Industrial Revolution. 'Ocean Acidification' #climate #carboncycle," and "Burning one gallon of gasoline puts nearly 20lbs of carbon dioxide into our atmosphere. #climate" (qtd. in Reilly, 2017).

Characterizing typical tweets from @BadlandsNPS helps illustrate the significance of these four tweets to our argument here. Although we wish to provide some description of the common content and form of tweets, we do not want to make claims about their genre status. Indeed, not making such claims is central to our argument. Because the content and form of tweets evolves rather quickly we might find proto-genres of science communication – or "genre candidates" (Gregersen, 2015) – but more important than a system of classification is acknowledging that there is some genre activity occurring. Put another way, although it may be difficult, as Miller and Shepherd (2009) found, to trace the rapid evolution of online genres of communication as they seem to "speciate," we can acknowledge genre-ing activities that help audiences understand and navigate the information they encounter in web-based media environments. Reviewing tweets from @BadlandsNPS over a year (January 2017 – January 2018), many posts feature photographs of the geography or photographs of wildlife,

with an accompanying textual description or quotation. Occasional archival photos or photos of visitors are included, notes about events or changes to operating hours, or facts about wildlife (e.g., the species of ferrets living in the area) or geography and habitat (e.g., sod tables or the biological soil crust), or quotations without accompanying photos, and there are also the occasional retweets (sharing messages that others originally posted). Climate change facts may appear to be a rather significant departure from the normal patterns of activity from @BadlandsNPS, although notably, in early January 2017, a number of tweets were made about climate change facts, using the hashtag #Climate. It was the series of tweets described above, posted on January 24th, 2017, that generated attention due to the gag order – it was a kairotic moment for climate change fact tweets (King, 2017). Soon after the tweets were posted, they were deleted, the press reported a statement from the National Park Service that a former employee unauthorized to use the account had shared these messages (Diaz, 2017).

Emerging from these tweets and the surrounding media attention, so-called AltGov Twitter accounts began to appear, such as @AltNatParkSer, and their authors claimed either to be involved with government agencies or more broadly as sympathizers with the cause. What seemed to be the cause? Political resistance to a new administration may seem the obvious social action these accounts hoped to achieve, but we argue many are positioned specifically as a defense of science, and quickly adopted the conventional form of the @BadlandsNPS account. However, @BadlandsNPS's use of climate change facts in response to a political exigence shifts the meaning of "the facts" insofar as they become (further) politically charged. What appears to be genred activity of simply reporting scientific information, then, has a rather different valence.

To understand more broadly how downstream accounts were influenced by the @BadlandsNPS's tweets, examining additional Twitter feeds provides further evidence. Since it is difficult to know who is behind a Twitter account, and indeed if they are a scientist, expert, or some other individual with the credibility to speak on some matter, the fact-checking website Snopes has worked to verify some of the Twitter accounts that emerged following the @BadlandsNPS's tweets. Notably, what they are able to verify is that the individual, or some of the individuals maintaining the accounts "has a legitimate connection to what they're posting about" (Binkowski, 2017). Table 1 provides an overview of the accounts verified by Snopes, and on their website, an up-to-date spreadsheet is available.

Tab. 1: Snopes List of Verified Accounts

@ActualEPAFacts	@alt_kellyanne_	@BadHombreNPS	@DeepStateRogue
@Alt_4nTrade	@Alt_Labor	@knot4sharing	@AltScalesOfJust
@AltArmedForces	@alt_labor_me	@RogueEPAStaff	@altEPAR9
@alt_BaldEagle	@alt_lawyer	@NastyWomenofNPS	@altDoD_
@altcouriersix	@AltLofC	@AltNMFS	@alt_localgov
@altDIA	@alt_Mars	@alt_FEC	
@altEPASmrtGrwth	@AltMtRainier	@altSmithsonian	
@AltGS_Rocks	@AltNatSecAgency	@altUSNPS	
@altHouseScience	@alt_uscbp	@TheRogueArkie	
@alt_jabroni	@altUSPressSec	@AltYelloNatPark	
@EducatorsResist	@AltWASONPS	@AngrierWHStaff	

Some accounts in this list tweet about climate change, including @AltArmedForces, which, during a cold spell in early 2018, tweeted, "The same people saying climate change is a myth because it is cold outside this week must also believe there is no drought anywhere in the world because it rained at their house today. #ClimateChange" (@AltArmedForces, 2018). Singular data points, anecdotes from personal experience, and generalization based on these experiences is critiqued in this tweet as a reminder that scientific work is based on objective, data-driven evidence. The tweet critiques those opposing climate change research findings on the basis of personal opinion, and the formulation of the tweet reveals how the shift from empirical evidence to personal experience aids in the politicization of climate science.

Accounts identifying with science-focused agencies, such as the Environmental Protection Agency, provide further illustrative cases. Consider @ActualEPAFacts, which has a short biography with the following text: "#AltGov: When the "elected" government lets you down, turn to us. We've got your back America" (@ActualEPAFacts, 2018). @ActualEPAFacts employs suggestive scare quotes and attempts to align themselves with the disenfranchised, further supported by their current Twitter banner, which reads "A Blue Congress Will Impeach" (blue is a colour aligned with the US Democratic party). Indeed, the account tweets a range of political messages, for example, the following selection of tweets:

> @ActualEPAFacts 2 Jan 2018 More Trump tweeting about his great big "nuclear button" should be the HARD LINE for every American that cares about this country. Trump is a danger to us all. #Impeach45
> @ActualEPAFacts 19 Dec 2017 More The United States of America is now in the hands of criminals. 2018 is our last chance to save this country...

> @ActualEPAFacts 9 Nov 2017 More One year ago today we woke up to headlines we thought we'd never see. We've come a long way since then. We CAN make a difference. One year from now we will be celebrating a blue House and Senate.

These tweets have very little relation to the EPA in particular and certainly concern the broader current political situation. Although there are some tweets about climate change:

> @ActualEPAFacts 26 Jan 2017 Climate change is the greatest global threat to coral reef ecosystems. Check out @noaaocean's graphic for more info. #climatechange [omitted a graphic]

As well, interestingly, a specific claim that science is not a partisan political issue:

> @ActualEPAFacts 20 Feb 2017 More "Science is not Democratic or Republican, progressive or conservative. Science is science." Wise words from @SenSanders #sciencenotsilence

And a rather ominous message about the significance of science in our lives:

> @ActualEPAFacts 25 Jan 2017 "WHEN THE VOICES OF SCIENTISTS ARE NOT HEARD, THERE IS A PRICE TO PAY." [*quotation marks and capitalization original*]

Political messaging is clear even in the name of some "alt gov" Twitter accounts, such as the "@BadHombreNPS" account. The 45th POTUS used the phrase "bad hombres" and the overt racism of the term in political discourse made its way into the naming of an AltGov Twitter account, one also signaling solidarity with the National Parks Service (NPS). Their Twitter biography further clarifies their vantage: "Unofficial feed of Badlands NP. Protecting rugged scenery, fossil beds, 244,000 acres of mixed-grass prairie & wildlife from two-bit cheetoh-hued despots" (@BadHombreNPS, 2018).

Among the AltGov accounts, @AltYelloNatPark frames itself directly, as both scientists and activists, writing they are: "An unofficial group of employees scientists and activists, in and around Yellowstone national park. We will try and keep you informed, when others can't".[3] Tweets include mention of the so-called "flat earth" movement, current political events, tweets about conservation, and the value of national parks. Others recognize exactly the political melee they are enmeshed within, including @altHouseScience, "Run by PhD-holding, peer-review loving, non-gov't members of #TheResistance. Providing science commentary. DM to get involved. Not the official @HouseScience", who commented "Science is not above the fray of politics" (@altHouseScience, 2017).

Although it may appear that tweeting scientific facts or information is a genred activity online, what we have suggested here is that the configuration of media, public audiences, partisan political narratives in the public discourse sphere, and the norms

3 https://twitter.com/AltYelloNatPark.

and values of scientific discourse communities function in such a way that what may have once been a genre of science communication has shifted into a partisan political typification. Tweets about climate change may sometimes serve to inform, but they now also, in their uptake by rogue Twitter accounts, respond to a rhetorical situation markedly different. Rather than communicating with a public that is unaware of these facts or who may simply be interested in the science, these rogue Twitter accounts are responding to a rhetorical situation defined by partisan politics at the highest national level in the United States.

Rising temperatures, ocean acidification, and a laundry list of other scientific facts provide the basis for scientists' understanding that climate change is happening and that humans play a significant role in that phenomenon. There is a practical problem with the approach to disseminating pure, apolitical information: the moment this information moves into broader public discourses, it participates in those already-established norms and conventions. Scientists cannot, any more than any other group, create a discourse sphere with broad, public audiences that will simply play by the rules of discourse in scientific professions, even if public audiences *wanted* to play by those rules.

9.4 Final Remarks

Genre theory helps us interrogate the ways in which the movement of genred tweets sharing climate change facts give way to more overtly politicized climate change arguments, a kind of speciation of scientific tweets communicating climate change research and science more broadly. For supporters, politicized tweets about science seem to function, ironically, to suggest that science will not bow to partisan political concerns. Science has the facts and scientists will share those facts, directly and without the kinds of manipulations partisan political discourses engage. Although this is a noble aspiration, it is unfortunately a naive understanding of the discourse sphere scientists are entering.

What is at stake for researchers communicating about climate change is the very message they hope to deliver. Twitter reveals how the rapid adoption of new media forms for communication of complex research can be challenging and can even be co-opted by those with adversarial positions. Genre theory can help us explore and explain the challenges in new media forms by identifying where norms, conventions, and expectations in different discourse communities appear to be incommensurable – and, importantly, where they are influential.

Devitt (this volume) explores the different forms of genre work we might conduct when deploying genres *for* social action. One form of generic resistance she illustrates is taken from scientific spheres of discourse. "Scientists," she writes, "report their results in scientific articles rather than news reports not only because that's the norm but because the genre fits their values and worldview," and as such they

may not choose to participate in more popular forms of writing (Devitt, this volume). The challenge for scientists is that when they "venture into other genres to reach a broader audience, they can meet both their own and readers' resistance" (Devitt, this volume). Importantly, we do not wish to suggest that engagement in public and/or online spheres of discourse are problematic. Rather, we wish to underscore, to echo Devitt once more, "Genre matters." Genre awareness matters crucially in rapidly evolving online spheres of discourse, where genres routinely evolve into new forms or may take on hybrid forms, because with this increasing complexity in the genres we navigate, there are greater opportunities for a rhetorical misstep. For scientists communicating about climate change, the stakes are high. Thus, it is vital that we continue the conversation about emerging rhetorical situations in online environments with scientists and researchers using web-based genres for social actions. After all, this case reminds us – in contrast to @ActualEPAFacts' argument – science is never simply science, particularly when it engages actively with general publics in social media spaces. Instead, as @altHouseScience writes, "Science is not above the fray of politics."

References

@ActualEPAFacts (2017, January 25). "WHEN THE VOICES OF SCIENTISTS ARE NOT HEARD, THERE IS A PRICE TO PAY." [Twitter Post]. Retrieved from https://twitter.com/actualepafacts/status/824443506894708736.

@ActualEPAFacts (2017, January 26). "Climate change is the greatest global threat to coral reef ecosystems. Check out @noaaocean's graphic for more info. #climatechange" [Twitter Post]. Retrieved from https://twitter.com/ActualEPAFacts/status/824665179778641920.

@ActualEPAFacts (2017, February 20). "Science is not Democratic or Republican, progressive or conservative. Science is science." Wise words from @SenSanders #sciencenotsilence" [Twitter Post]. Retrieved from https://twitter.com/actualepafacts/status/833804675258396673.

@ActualEPAFacts (2017, November 9). "One year ago today we woke up to headlines we thought we'd never see. We've come a long way since then. We CAN make a difference. One year from now we will be celebrating a blue House and Senate." [Twitter Post]. Retrieved from https://twitter.com/ActualEPAFacts/status/928630487253471232.

@ActualEPAFacts (2017, December 19). "The United States of America is now in the hands of criminals. 2018 is our last chance to save this country..." [Twitter Post]. Retrieved from https://twitter.com/ActualEPAFacts/status/943321341419192320.

@ActualEPAFacts (2018). Biography. [Twitter Account]. Retrieved from https://twitter.com/actualepafacts.

@ActualEPAFacts (2018, January 2). "Trump tweeting about his great big "nuclear button" should be the HARD LINE for every American that cares about this country. Trump is a danger to us all. #Impeach45." [Twitter Post]. Retrieved from https://twitter.com/ActualEPAFacts/status/948411487097360384.

@AltArmedForces (2018, January 3). "The same people saying climate change is a myth because it is cold outside this week must also believe there is no drought anywhere in the world because it rained at their house today. #ClimateChange" [Twitter Post]. Retrieved from https://twitter.com/AltArmedForces/status/948595409651404801.

@altHouseScience (2017, January 9). "Science is not above the fray of politics." [Twitter Post]. Retrieved from https://twitter.com/altHouseScience/status/950398808265056256.

@AltYelloNatPark (2018). Biography. [Twitter Account]. Retrieved 2019, March 7, from https://twitter.com/altyellonatpark?lang=en.

@BadHombreNPS (2018). Biography. [Twitter Account]. Retrieved from https://twitter.com/badhombrenps?lang=en.

Andersen, J. (2016). Genre, the organization of knowledge and everyday life. In *Proceedings of the Ninth International Conference on Conceptions of Library and Information Science*, Uppsala, Sweden, June 27–29, 2016 Information Research, 22(1) paper colis1647. Retrieved from http://InformationR.net/ir/22-1/colis/colis1647.html (Archived by WebCite® at http://www.webcitation.org/6oJgtXunh).

Andersen, T.H., & van Leeuwen, T.J. (2017). Genre crash: The case of online shopping. *Discourse, Context & Media*, *20*, 191–203. doi:10.1016/j.dcm.2017.06.007.

Auken, S. (2015). Genre and interpretation. In S. Auken, P.S. Lauridsen, & A.J. Rasmussen (Eds.), *Genre and …* (154–183). Copenhagen: Ekbátana (Copenhagen Studies in Genre; vol. 2).

Bazerman, C. (1988). *Shaping written knowledge*. Madison, WI: The University of Wisconsin Press.

Binkowski, B. (2017, April 24). Twitter's alts and rogues. *Snopes.com*. Retrieved from https://www.snopes.com/2017/06/01/alts-and-rogues/.

Burkeman, O. (2003, March 4). Memo exposes Bush's new green strategy. *The Guardian*. Retrieved from https://www.theguardian.com/environment/2003/mar/04/usnews.climatechange.

Caple, H., & Knox, J.S. (2017). Genre (less) and purpose (less): Online news galleries. *Discourse, Context &* Media, 20, 204–217.

Ceccarelli, L. (2011). Manufactured scientific controversy: Science, rhetoric, and public debate. *Rhetoric & Public Affairs*, *14*(2), 195–228. doi:10.1353/rap.2010.0222.

Davenport, C. (2017, January 20). With Trump in charge, climate change references purged from website. *New York Times.* Retrieved from https://www.nytimes.com/2017/01/20/us/politics/trump-white-house-website.html.

Diaz, D. (2017, January 24). Badlands National Park deletes tweets on climate change. *CNN*. Retrieved from www.cnn.com/2017/01/24/politics/badlands-tweets-climate-change/index.html.

Fahnestock, J. (1986). Accommodating science: The rhetorical life of scientific facts. *Written Communication*, *3*(3), 275–296.

Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Berkeley: University of California Press.

Giltrow, J., & Stein, D. (Eds.). (2009). *Genres in the Internet: Issues in the theory of genre*. Amsterdam, The Netherlands: John Benjamins Publishing Company.

Gregersen, F. (2015). Genre and everyday conversation. In S. Auken, P.S. Lauridsen, & A.J. Rasmussen (Eds.), *Genre and …* (56–98). Copenhagen: Ekbátana (Copenhagen Studies in Genre; vol. 2).

Kelly [now Mehlenbacher], A.R., & Miller, C.R. (2016). Intersections: Scientific and parascientific communication on the Internet. In A.G. Gross & J. Buehl (Eds.), *Science and the Internet: Communicating knowledge in a digital age* (221–245). Amityville, NY: Baywood Press. doi:10.2190/SCIC11.

King, L. (2017, January 24). EPA 'pause' on public communications fuels wider alarm about openness. *USA Today.* Retrieved from https://www.usatoday.com/story/news/politics/2017/01/24/epa-pause-public-communications-fuels-wider-alarm-openness/97009206/.

Lewis, J. (2016). Content management systems, Bittorrent trackers, and large-scale rhetorical genres: Analyzing collective activity in participatory digital spaces. *Journal of Technical Writing and Communication, 46*(1), 4–26. doi:10.1177/0047281615600634.

Mellon, J., & Prosser, C. (2017). Twitter and Facebook are not representative of the general population: Political attitudes and demographics of British social media users. *Research & Politics*, *4*(3). doi:2053168017720008.

Miller, C.R. (1984). Genre as social action. *Quarterly Journal of Speech*, 70(2), 151–167.

Miller, C.R. (2017). Where do genres come from? In C.R. Miller & A.R. Kelly [now Mehlenbacher] (Eds.), *Emerging genres in new media environments* (1–34). London: Palgrave Macmillan. doi:10.1007/978-3-319-40295-6_1.

Miller, C.R., & Kelly [now Mehlenbacher], A.R. (Eds.). (2017). *Emerging genres in new media environments*. London: Palgrave Macmillan.

Miller, C.R., & Shepherd, D. (2004). Blogging as social action: A genre analysis of the weblog. In L. Gurak et al. (Eds.), *Into the blogosophere: Rhetoric, community, and culture of weblogs*. University of Minnesota Libraries.

Miller, C.R., & Shepherd, D. (2009). Questions for genre theory from the blogosphere. In J. Giltrow & D. Stein (Eds.), *Genres in the Internet: Issues in the theory of genre* (263–290). Amsterdam, The Netherlands: John Benjamins Publishing Company.

Oreskes, N. (2004). The scientific consensus on climate change. *Science, 306*(5702), 1686. doi:10.1126/science.1103618.

Oreskes, N. (2010). *Merchants of doubt*. New York: Bloomsbury Press.

PEW Research Center (2016a, October 4). The politics of climate. *Pew Research Center*. Retrieved from http://www.pewinternet.org/2016/10/04/the-politics-of-climate/.

PEW Research Center (2016b, November 11). Social media update 2016. *Pew Research Center*. Retrieved from http://www.pewinternet.org/2016/11/11/social-media-update-2016/

PEW Research Center (2017). Social media fact sheet. *Pew Research Center*. Retrieved from http://www.pewinternet.org/fact-sheet/social-media/.

PEW Research Center (2018, March 1). Social media use in 2018. *PEW Research Center*. Retrieved from http://www.pewinternet.org/2018/03/01/social-media-use-in-2018/.

Pflugfelder, E.H. (2017). Reddit's ''Explain Like I'm Five'': Technical descriptions in the wild. *Technical Communication Quarterly, 26*(1), 25–41.

Reiff, M.J., & Bawarshi, A. (Eds.). (2016). *Genre and the performance of publics*. Logan: Utah State University Press.

Reilly, K. (2017, January 24).A rogue national park is tweeting out climate change facts in defiance of Donald Trump. *Time Magazine*. Retrieved from www.time.com/4645927/badlands-national-park-climate-change-tweets/.

Revesz, R. (2017, January 27). Donald Trump personally called the national park service director about those Inauguration photos. *Independent*. Retrieved from https://www.independent.co.uk/news/world/americas/donald-trump-national-park-service-michael-reynolds-inauguration-crowd-size-photos-proof-a7548601.html.

Schryer, C.F. (1993). Records as genre. *Written Communication*, *10*(2), 200–234.

Sherlock, L. (2009). Genre, activity, and collaborative work and play in World of Warcraft: Places and problems of open systems in online gaming. *Journal of Business and Technical Communication, 23*(3), 263–293.

Smart, G. (2016). Discourse coalitions, science blogs, and the public debate over global climate change. In M. Reiff & A. Bawarshi (Eds.), *Genre and the performance of publics* (157–177). Logan: Utah State University Press. doi:10.7330/9781607324430.c008.

Supran, G., & Oreskes, N. (2017). Assessing ExxonMobil's climate change communications (1977–2014). *Environmental Research Letters, 12*, 1–18. doi:10.1088/1748-9326/aa815f.

Yates, J., & Orlikowski, W.J. (1992). Genres of organizational communication: A structurational approach to studying communication and media. *Academy of Management Review, 17*(2), 299–326.

Wickman, C. (2016). ''Learning to share your science": The scientific notebook textual object and dynamic rhetorical space. In A.G. Gross & J. Buehl (Eds.), *Science and the Internet: Communicating knowledge in a digital age* (11–32). Amityville, NY: Baywood Press.

Zappavigna, M., & Zhao, S. (2017). Selfies in 'mommyblogging': An emerging visual genre. *Discourse, Context & Media, 20*, 239–247. doi:10.1016/j.dcm.2017.05.005.

Sune Auken

10 Genre, Anthropogenic Climate Change, and the Need to Smell your Body Odor. A Personal Postscript

As I am writing this in late August 2019, the Amazon is burning, there has been a dramatic melt-off from the Greenland glaciers over the summer, Iceland has held a burial for one of its Jökuls, lost to anthropogenic climate change, and a petite Swedish teenager, catapulted into climate debate stardom for her school strike for the climate, is crossing the Atlantic in a solar driven sailboat; while middle-aged pundits pontificate at her lack of school attendance – or whatever other point they can find to criticize her, or the attention her presence in the climate debate has raised. In at least once instance, this rose to the level of a public death threat – with no visible consequences for the threatener, secure in his privilege, except for a smallish media hassle (Busby, 2019). They may break her, though she seems remarkably sturdy, but her central argument they shall never break.

None of these things could be predicted with any certainty when the chapters in this volume were first submitted to the editors in January 2018, but it is easily predictable that new extreme weather events connected to anthropogenic climate change will occur at an increasing rate. It is equally predictable that as the effects of climate change become more dramatic, so will the calls to action, and with them new genres will arise, and old genres will be deployed or repurposed to get the message across; like the burial of the Jökul mentioned above. The counter reaction is just as predictable. Even the most basic statements of the science involved will be obfuscated, and misdirection, disinformation, and attempts to dismay will be generously applied at every stage of the process.

It is known, because it has been so for decades; and information that was not only alarming but also fully actionable decades ago, has not been allowed to make an impact strong enough to fundamentally alter the situation. Change that is obvious and necessary has been fought tooth and nail every step of the way.

In the process, it has become clear that ACC is not just a challenge for the sciences. There is of course still much to be done, and even more, possibly, for the technical sciences as tech-based countermeasures will become increasingly necessary. However, the greatest conundrum may prove to be in the humanities and the social sciences. How is it even possible that highly exigent information for which overwhelming evidence exists does not make an immediate and strong impact on ideologies, policies, and life practices across the globe? Why is it still not made an overwhelming priority in the transport sector to lessen air travel? Why is meat production still heavily subsidized in many places? Why have fossil fuels not been downscaled dramatically at

least a decade ago? And why, oh why, are we now so desperately short on time when we knew of the problem well-nigh half a lifetime ago?

Our perception of the world is inevitably ideological. We cannot avoid it. The world, as it appear to us, is never just the world, it is always the world *as it appear to us*, and we are, for better or worse, never neutral observers. We always have an agenda, we always have values, and we always have interests. Nothing we do and nothing we say can change that.

For me as researcher whose professional topic is genre, the question of implied ideology is always close at hand. Our ideology is naturalized to us as we grow up and move through the education system. It is naturalized through the values represented in our upbringing, through our professional and private interactions, and through our language. All of these things are deeply enmeshed with genre. Being habitual, genre are "just the way we do things around here" (Schryer, 2002, 76). They may acquire an "illusion of normalcy" (Paré, 2002, 61) that might even lead to a "cultural reproduction of ignorance" (Segal, 2007, 4). As Kidd says: "Ideology is like B.O. [...] you never smell your own" (2013, 553; see also Paré, 2002, 60). From a genre perspective, if there is one thing the debate over ACC demonstrates, it is the inertia inherent in genre use. Patterns of understanding and interpretation once established seem to carry on even when they have long outlived their usefulness.

However, we are not without agency; we are not bound by fate to be victims of genre; in fact, uses of genre invariably have a genre user who, even in the most casual cases, is not an automaton. As reflective beings, we have the option to educate ourselves and to think critically about our implied values, even when these values are embedded in genres that are deeply habitual to us. We may never be fully independent or fully at a distance, but we can criticize genres through other genres, and language use through language use. In fact, genre provides us with many different means when we try to change some aspect of the world for the better, as Amy Devitt demonstrates in her chapter in this volume. Moreover, the kind of critical genre awareness, Devitt and others have argued for, may be one form of the "inoculation" against disinformation that Cook, Lewandowski, & Ecker (2017) argue is possible. By exposing people to the manifold ways genre can be used to disinform and manipulate in a controlled manner, you may teach them to recognize not only how they are made the objects of disinformation. From the point of view of genre pedagogy, this would also be a step towards teaching them how they themselves can tailor their use of genre to fit better purposes.

The chapters in the present volume can be taken as an attempt to establish the background knowledge needed for a broader awareness surrounding genre use in the debate over ACC. They demonstrate how genre is – among other things – a discursive battle ground in which actors maneuver to achieve their social purposes; not just on personal or organizational level, but even in large-scale attempts to influence the direction of society. The chapters move from minuscule genres like the tweet or the editorial cartoon to genres charged with doing the heavy lifting of societal action

like the petition or the congressional hearing. On each level, the genres appear as flexible and versatile cultural categories structuring human understanding and communication, but also as invitations to action, as individual actors take them up and maneuver to use them for their own purposes. The structuring that genre adds to our understanding may appear to be set in stone and steel, but proves to be malleable, as it adapts, or is made to adapt, to the shifting purposes of individual genre users. This is clearly the case with some of the manipulations described, the use of the congressional hearing system to suppress political recognition of the reality or severity of ACC, or the manipulative uptakes of climate science in denialist discourse communities preparing the ground for a broad swath of disinformation concerning ACC – uptakes, where knowledge and evidence is deliberately transformed into doubt and denial. However, it is also – and equally – the case, when humor is deployed to carry a message that horror has failed to get across, and which the usual news channels have not represented with sufficient clarity, or when scientists take to Twitter when their official communication channels are closed off by political decisions. In each of these cases, there is a complex interplay between established genre norms, and the uptakes of individual actors. Moreover, in all these cases the implied understandings and the implied ideology of the genres involved are in play. Sometimes this leads to conflict, when the control of the stasis in a congressional committee, which has its own legitimization and its own purposes, is used to block knowledge from actually getting through to the committee conclusions; or when the scientific drift towards stating fact meet the fast-paced exchanges in tweets. However, sometimes they align in surprising way, as when the aforementioned respect for facts in the genres of science, finds an unlikely ally in news satire's carnevalesque joy in mocking those disconnected from basic, observable reality.

Given that genres are well-nigh omnipresent in human communication and understanding, and also the central role genres play there, as evidenced not only by the chapters in the present volume, but also by a wide swath of previous research, it is fair to say that the chapters in the present volume, are only a starting point. They demonstrate how an understanding of the genres involved allows us to shed a new light on the way genre is used, and sometimes abused, in the debate over ACC. This is worth noticing not just because our failure to recognize manipulations through genre have led to widespread disinformation – and the slow pace of positive action to address ACC on a societal level – but also, and in a sense more importantly – because it points to the way genres can be used to create action and to move a debate forward.

In the postscript to a previous anthology on genre research, Ashley Rose Mehlenbacher remarked:

> Attending to conversations across disciplines and national contexts will become increasingly important as genre continues its unabated tour of our scholarly homes. Understanding genre studies is then to understand an interdisciplinary conversation that propels this idea of genre

> toward a complicated and likely contested idea of human communication in all its linguistic, social and cognitive capacities. (Mehlenbacher (then Kelly), 2017, 293)

The studies in the present volume continue the unabated tour into a context that clearly moves across disciplines and national contexts, but at the same time it takes it to new places on the intersection of research and politics and, by consequence, to the point where knowledge and societal action overlap. A major part of the potential, genre research has at this intersection springs from its systematic interest in genres as carriers and enablers of knowledge, action, and ideology. Because these genre structurations are always there, sometimes very much under the radar, but also always malleable and subject to the control of individual actors, an understanding of the roles genres play can help us see the patterns, that are sometimes deployed against us, sometimes work on us without our knowledge, and can sometimes be harnessed for positive action. This might, in turn, help us react more appropriately when ideologically charged think tanks deploy their divisionary uptakes to scientific evidence. We might even be able to see through the shtick when middle-aged pundits choose to fill the airwaves with divisionary op-eds, tweets or statements to direct the public attention away from the message of a teen girl deploying a well-known genre, the strike, in a surprising and surprisingly effective attempt to change the public debate over anthropogenic climate change.

References

Busby, M. (2019, August 15th). Arron Banks jokes about Greta Thunberg and 'freak yachting accidents'. *The Guardian*.

Cook, J., Lewandowsky, S., & Ecker, U.K.H. (2017). Neutralizing misinformation through inoculation: Exposing misleading argumentation techniques reduces their influence. PLoS ONE, 12(5). doi: 10.1371/journal.pone.0175799.

Kidd, B. (2013). Sports and masculinity. *Sport in Society*, 16(4), 553–564. doi:10.1080/17430437.2013.785757.

Mehlenbacher [then Kelly], A.R. (2017). Postscript: Futures for genre studies. In C. Miller & A.R. Mehlenbacher [then Kelly] (Eds.), *Emerging genres in new media environments*. Cham: Palgrave Macmillan.

Paré, A. (2002). Genre and identity: Individuals, institutions, and ideology. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The Rhetoric and Ideology of Genre* (pp. 57–71). Cresskill: Hampton Press Inc.

Schryer, C.F. (2002). Genre and power. A chronotopic analysis. In R. Coe, L. Lingard, & T. Teslenko (Eds.), *The Rhetoric and Ideology of Genre* (pp. 73–102). Cresskill, New Jersey: Hampton Press, Inc.

Segal, J.Z. (2007). Breast cancer narratives as public rhetoric: genre itself and the maintenance of ignorance. *Linguistics and the Human Sciences*, 3(1), 3–23. doi:10.1558/lhs.v3i1.3.

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