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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

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[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

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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 CO_2 to the greenhouse gases in the Earth's atmosphere; (3) CO_2-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

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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

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7 www.heartland.org; www.cornwallalliance.org; www.teaparty.org; www.cfact.org; www.friendsof-science.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 CO_2 is too high. We estimate a doubling of CO_2 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

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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.

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