Political Geography xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Political Geography

journal homepage: www.elsevier.com/locate/polgeo

A Laughing Matter? Confronting climate change through humor

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ABSTRACT

Why fuse climate change and comedy? Anthropogenic climate change is one of the most prominent and existential challenges of the 21st century. Consequently, public discourses typically consider climate change as 'threat' with doom, gloom and psychological duress sprinkled throughout. Humor and comedy have been increasingly mobilized as culturally-resonant vehicles for effective climate change communications, as everyday forms of resistance and tools of social movements, while providing some levity along the way. Yet, critical assessments see comedy as a distraction from the serious nature of climate change problems. Primarily through conceptions of biopower and through approaches to affect, this paper interrogates how comedy and humor potentially exert power to impact new ways of thinking/acting about anthropogenic climate change. More widely, this paper critically examines ways in which experiential, emotional, and aesthetic learning can inform scientific ways of knowing. These dynamics are explored through the 'Stand Up for Climate Change' initiative through the 'Inside the Greenhouse' project where efficacy of humor in climate change communication is considered while individuals and groups also build tools of communication through humor. This is a multi-modal experiment in sketch comedy, stand-up and improvisation involving undergraduate students, culminating in a set of performances. In addition, the project ran an international video competition. Through this case, we find that progress is made along key themes of awareness, efficacy, feeling/emotion/affect, engagement/problem solving, learning and new knowledge formation, though many challenges still remain. While science is often privileged as the dominant way by which climate change is articulated, comedic approaches can influence how meanings course through the veins of our social body, shaping our coping and survival practices in contemporary life. However, this is not a given. By tapping into these complementary ways of knowing, ongoing challenges remain regarding how communicators can more effectively develop strategies to 'meet people where they are' through creative climate communications.

1. Introduction

Amidst high-quality and well-funded scientific research into the causes and consequences of climate change, climate communications – and creative conversations about climate change in our lives – are comparatively stuck. At present, there are pressing needs to better understand how to effectively harness the power of resonant communications and creativity to confront what works where, when and why in climate-change discourse (Boykoff, 2011). Tapping into these complementary ways of knowing can more practically develop strategies of effective communications and engagement.

Among possible pathways, humor is generally underutilized; yet comedy has power to connect people, information, ideas, and new ways of thinking/acting (Stott, 2005). Comedy also brings to the fore multiple truths and ways of knowing, in its oft-deployed delight in the multiple meanings of single ideas, statements or even words. Comedy can exploit cracks in arguments, wiggle in, poke, prod, and make nuisance to draw attention to that which is incongruous, hypocritical, false, or pretentious (Berlant & Ngai, 2017). Comedy can wield power to destabilize and threaten fundamentalist thought and practice through more nuanced and conditional interpretations of truth (Osnes, 2008). Power flows through comedy to enable movement between 'authorized' and revealed alternatives and can seed fertile locations for subversion, resistance, liberation as it opens up additional dimensions of understanding of the world (Foucault, 1984).

Everyday people and elected officials typically do not engage with or learn about dimensions of climate change by reading peer-reviewed literature, whether in the latest Intergovernmental Panel on Climate Change (IPCC) report or through new scientific research from the journals of *Science* or *Nature*. Instead, people make links between formal science and policy and their everyday lives through a range of relevant media and person-to-person communications and experiences (Boykoff, 2011). Such are complex sub-political spaces (Lemke, 2002). Through a lens of biopower, comedy and jokes shape 'discourse formations' (Wilson, 2011, p. 278). Furthermore, we draw usefully on work to challenge potentialities of normalization through biopower by also considering concepts of affect (e.g. Adey, 2009; Anderson, 2017; Thrift, 2004). Together, we consider a politics of everyday life relative to these processes of comedy and climate change communications.

In recent years of apparent saturation of somber and science-led climate change discussions, comedy and humor are increasingly looked to as potentially useful vehicles to meet people where they are on

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https://doi.org/10.1016/j.polgeo.2018.09.006
Received 14 February 2018; Received in revised form 10 September 2018; Accepted 13 September 2018

climate change (e.g. Anderson & Becker, 2018; Nabi, Gustafson, & Jensen, 2018). While much public discourse on the topic of climate change has relied primarily on scientific ways of knowing over the past decades, prominent culturally-resonant framings have consequently focused on climate change as 'threat' with associated doom and gloom, and psychological duress (O'Neill, Boykoff, Niemeyer, & Day, 2013; Clayton et al., 2015). While scientific data are often privileged as dominant ways by which climate change is thought to be articulated, public understanding and engagement is embedded within a matrix of cultural, social, political and economic processes that make climate change meaningful in our everyday lives (Boykoff, 2011).

This study examines the 'Stand Up for Climate Change' project, an Inside the Greenhouse comedy event that took place in conjunction with a University of Colorado undergraduate course. Situated in the United States, the project pulled on US-dominated themes, memes and cultural politics.[1] It featured primarily Environmental Studies majors creating and performing stand up and sketch comedy for a live audience, primarily of their peers. In addition, the project ran an international video competition. Through this case, we examine comedic and humorous sites as 'ways of knowing' to then analyze how power flows through discourses and actions in the public arena.

In this paper, we examine this case-study in order to more broadly assess how comedy has had the power to influence public thought, understanding, and behavior over time. We explore how roots of comedy shape contemporary uses, and analyze how comedic approaches uniquely contribute to ways of knowing and understanding through both theory and practice of climate change communication. Through surveys of participants and audiences, we consider the process and products of a sketch comedy, improvisation, and experiment that culminated in a set of live performances along with a video competition. We then interrogate how productive this comedic experiment was for both the students and the audiences in terms of climate communication.[2] Finally, general conclusions are drawn about comedy as a multimodal communication pathway that is able to meet people where they are on climate change and tap into complementary ways of knowing in order to more effectively develop strategies for effective and creative communications about climate change in the 21st century.

2. Why climate change communication through comedy

Climate change is a collective action problem, a consequence of shared behaviors that cuts to the heart of how we live, work, play and relax in modern life. Climate change is an issue filled with many deep-seated paradoxes, making it a topic that exposes both frivolity and failings of the human race. Examples include the paradox that as greater (scientific) understanding improves, rather than settling all associated questions, the process unearths new and more questions to be answered, and the paradox that people at the forefront of climate impacts are rarely the people who have contributed much to climate change through their small carbon footprints. Climate change has become a defining symbol of human's collective relationship with the environment. This common and shared adversity alongside innovations in climate communication research has led some to turn to comedy to creatively confront the multifarious threat of contemporary climate change.

In this project, we interrogate the notion that comedic communications about climate change increase salience of climate change and expose audiences to new ways of learning about associated threats, challenges and opportunities.[3] Moreover, we examine how comedic approaches may offer new routes to 'knowing' about climate change, overcoming often sober or gloomy scientific assessments through experiential, narrative, emotive and relatable storytelling. In addition, we consider how humorous treatments can help increase one's accessibility to the complex and often-distant dimensions of climate change while bringing a long-term set of issues into the immediate social context. While comedy may provide relief amid anxiety-producing evidence as an emotional salve and tool for coping, we explore how comedy may also serve to bridge difficult topics and overcome polarized discussions by entertaining in non-threatening ways. To study improv (short for improvisation) as a part of this experience is to work to overcome conditioned responses and behaviors. The difficulty in learning improv is largely the difficulty in letting go, having an open mind, and embodying a willingness to try out new realities among other people. It takes training and rehearsal to develop skills, control, confidence, mental agility, trust, and spontaneity that help with improvisation (Atkins, 1994). The 'Stand Up for Climate Change' project took up the perspective that improvising new approaches and actions for understanding and addressing climate through improv and comedy can help discover new pathways forward for climate change awareness, learning and engagement.

Through multiple comedic pathways – from the satirist mocking subjects from a superior position to the humorist who stands arm and arm with its subject affectionately to the comedian who stands below as a victim of the system who can self-deprecatingly punch up – comedy and humor ask questions and therefore exert power to create new ways of considering issues like climate change (Stott, 2005). As a high-stakes, high-profile and highly-politicized challenge in the new millennium, climate change has the potential to overwhelm everyday people. Comedic approaches have the potential to help alleviate these feelings and can make these issues more approachable and manageable. Comedy can make more digestible chunks of climate information through compelling stories, making communications more palatable and easier to swallow. Comedic approaches offer potential to shepherd in new pathways of knowing through experiential, emotional and aesthetic learning. Climate change comedy and humor can increase salience of climate change issues (exposing audiences to new insights); offer new routes to 'knowing' about climate change (through experience/emotion/affect); help increase accessibility of a complex, often-distant, long-term set of issues; engage new audiences; increase retention of climate change information through effective storytelling; provide relief amid anxiety-producing evidence of causes and consequences of climate change; and bridge difficult topics, overcoming polarized discussions through often entertaining/non-threatening ways.

In studies of the efficacy of comedy for effective communication beyond climate change, some research has shown that perceptions of distant threats may impede expressions of concern and engagement on various social topics (McGraw et al., 2012, 2014). Moreover, research has shown that positive emotions can actually serve to inhibit the sense that something is wrong and needs to be addressed through problem-solving behaviors (McGraw, Schiro, & Fernbach, 2015). These findings are tethered to links between distancing effects, affect and risk perception (Johnson & Tversky, 1983). Yet a theory of 'benign violations' –

[1] This US location lends to the US American-centric examples that follow in this manuscript.

[2] Our chosen title 'A Laughing Matter?' seeks to illustrate the question of efficacy that motivates this study.

[3] In recent years, those who may not otherwise pay attention to climate change have found pathways to engage with it through the televised comedy of Larry Wilmore (former host of *The Nightly Show* featuring a panel including Bill Nye the Science Guy to discuss presidential candidates' stances on climate), Seth Myers (*Late Night* host who occasionally targets the Trump administration's stance on climate change), Samantha Bee (who reports on *Full Frontal* about news stories in regard to science denial), and former host Jon Stewart and current host Trevor Noah of *The Daily Show* and former *Colbert Report* host Stephen Colbert (now host of *Late Night with Stephen Colbert)* (who have made jokes about climate related claims and claims-makers) in the USA. These comedians and others have engaged with occasional climate change-related segments.

that something is wrong yet non-threatening – developed by Peter McGraw and Caleb Warren has helped to illuminate how the vehicles of humor and comedy possess power to find traction in public discourse (2010).

Past studies of comedy and climate change have examined these potentialities in varying contexts. These have focused largely on television programming and videos. Lauren Feldman studied comedic reports on climate contrarianism on popular US programs *The Daily Show* and *The Colbert Report* and found the programs were able to more effectively question dissenters (also called 'contrarians' or 'deniers') in ways that an 'objective' journalist could not (2013). In follow up work, Feldman considered these findings in the context of larger considerations of potential misreading of satirical intent, of the capacity of satire to communicate the often-serious issues within science (2017). Ailise Bulfin explored the role of ecological catastrophe narratives in current popular US culture through US programs like the comedic sitcom *Last Man on Earth* (2017). In a separate study of *The Daily Show* and *The Colbert Report*, Paul Brewer and Jessica McKnight argued that "satirical television news may provide an alternative route for influencing public perceptions of climate change by presenting information in an entertaining format that draws otherwise unengaged viewers" (2015, 2017). Brewer and McKnight have also analyzed the US show *Last Week Tonight* with John Oliver and found that watching particular segments about climate change increased viewers' belief about global warming (2017). Through a study of *BBC* programming, Joe Smith argued that comedic approaches provided exceptional openings to consider links between sustainability, material consumption and climate change (2017). More recently, Robin Nabi, Abel Gustafson and Risa Jensen found that emotional experiences enhanced climate change policy advocacy among the experimental study group participants of US undergraduate students (2018). Furthermore, through an experimental study of sarcastic humor Ashley Anderson and Amy Becker found that the levity of video communications in *The Onion* served to raise beliefs that the climate is changing and heightened perceived risk of climate change among respondents who did not previously believe climate change was a serious issue (2018).

Viewing climate change engagement through comedy more widely, a number of studies have looked at representations of climate change through climate fiction ('cli-fi'), climate-related theater and poetry (e.g. Galindo, 2016, p. 243; Svoboda, 2016; Tate, 2017). Adeline Johns-Putra found that these new communication avenues – evident particularly through UK dramatist John Godber's 2007 *The Crown Prince* – have widened audience engagement on climate change (2016). Similarly, Viviane Gravey and colleagues found that comedy fostered enhanced learning on climate change and sustainability topics (2017). In analog work to address poverty and environmental degradation through climate adaptation, Sreeja Nair found that participatory comedy skits exhibited potential to enhance social learning (2016).

However, not all studies to date point clearly to comedy and climate change as an effective pairing that shapes attitudes about climate change. In a recent study, Christofer Skurka and colleagues found that humorous video communications produced greater intentions to take action on climate change, but did not heighten risk perceptions (2018). In a study of knowledge and attitudes on climate change among university students, B. Elijah Carter and Jason Wiles found that comedic approaches did not enhance learning and engagement (2016). Carter and Wiles surveyed undergraduate students about their attitudes and opinions regarding climate change after watching one of two videos: one, an authoritative educational film from the IPCC; the other, a comedic video about climate change by either Jon Stewart, Stephen Colbert, or John Oliver. They wrote, "Despite our expectations about differential effects between IPCC and Comedy videos, little difference was observed. No group was significantly more or less likely to change their opinion about climate change" (2016, 17). While Foucault did not centrally address considerations of comedy and joking, his approach through biopower helps us to consider jokes and humor as micro-events, and the process of comedy as a practice and process that have the power to maintain, contest, construct and challenge wider discourses.

Through conceptions of biopower along with treatments of affect and through additional literature in environmental communication and emotional and affective geographies (e.g. Anderson & Adey, 2011; Davidson, , Smith, , & Bondi, 2012; Negri, 1999; Thrift, 2008), we interrogate how comedy and humor in this 'Stand Up for Climate Change' event exert power with/through people to both connect and distract and to shape new ways of thinking/acting about anthropogenic climate change. More widely, we then consider complex ways how humor influences experiential, emotional, and aesthetic ways of knowing about climate change (e.g. Chapman, Lickel, & Markowitz, 2017; Hoewe & Ahern, 2017; van der Linden, 2014). As such, we examine power *within* rather than power *over* the process of and effects from comedic communications of climate change. The dimensions of power and affect course through the veins of a shared social body at particular times and places (Thrift, 2004) to comprise 'a politics of life' (Anderson, 2012).

By examining the addition of humor to the climate change communication mix with the conceptual tools of biopower and affect, this article seeks to understand how power has been and can be harnessed to positively contribute to effective climate communication. Michel Foucault has written, "it is not the activity of the subject of knowledge that produces a corpus of knowledge, useful or resistant to power, but power-knowledge, the processes and struggles that transverse it and of which it is made up, that determines the forms of possible domains of knowledge" (1975, 27–28). In other words, the dynamism and non-linearity of comedy provides potential sites of powerful resistance amid adversity.

With these varied study findings in mind, through this 'Stand Up for Climate Change' case study we delve into questions of awareness, efficacy and learning associated with comedy and climate communications. We examine how humor and comedy can influence perspectives, attitudes, intentions, beliefs and behaviors through the class experience, evaluate specific offerings within this experience, and analyze performances as well as participant responses to a survey on experiences working on this class experience. This approach builds on previous investigations of comedy and climate communication while it uniquely studies elements of live performances along with surveys of participants and audiences to draw out intersecting concepts of biopower and affect.

3. Stand up if you love climate change?

The 'Stand Up for Climate Change' initiative has taken place over three years from 2016 to 2018, as part of the Inside the Greenhouse (ITG) project at the University of Colorado. The ITG project's title signals an acknowledgment that, to varying degrees, all are implicated in, part of, and responsible for greenhouse gas emissions into the atmosphere. Through the development and experimentation with creative modes of communication, ITG treats the 'greenhouse' as a living laboratory, an intentional place for growing new ideas and evaluating possibilities to confront climate change through a range of mitigation and adaptation strategies. Through undergraduate classes, internships and events, ITG provides links between the natural and social sciences and arts to communicate, imagine and work toward a more resilient and sustainable future, while also opening a space for students to become meaningful and sustaining content producers. As such, ITG helps students build competence and confidence to tell and re-tell stories of climate change in ways that are meaningful for target audiences (Osnes, Safran, & Boykoff, 2017).

Drawing on the potential power of comedy as a communication tool, ITG participants took on the task of translating climate change issues to public audiences through the 'Stand Up for Climate Change' initiative. This was a multi-modal experiment in sketch comedy, improvisation, and stand up with undergraduate students at the University

of Colorado, culminating in a set of live performances along with a comedy and climate change short video competition. The project was therefore primarily participatory. The project also conducted an international video competition. The initiative grew from ongoing efforts to find ways to connect with different audiences to make climate change more relevant and meaningful through humor and for the students to experience comedy as a viable mode of climate communication.[4]

To analyze the efficacy of these efforts, we deployed a mixed-method approach. We conducted surveys of participants (N = 79) and audience members (N = 46)[5] and supplemented these findings through content analysis of the performances (N = 31) as well as participant observation throughout the process. We coded participant and audience responses through both *a priori* themes (awareness, efficacy, learning/knowledge, engagement/problem solving, feelings/emotion/affect) and emerging themes identified in the analysis (conversations/discourse, inspiration). This approach is consistent with research by Clifford and Travis (2018) and Stemler (2001). In addition, we took up a multi-modal approach, where modes are open-ended and multi-faceted systems through which meaning is communicated in the spirit of finding ways to connect with different audiences to make climate change more relevant and meaningful. A 'mode' is defined as "a system of choices used to communicate meaning. What might count as a mode is an open-ended set, ranging across a number of systems, including but not limited to language, image, color, typography, music, voice, quality, dress, gesture, special resources, perfume, and cuisine" (Page, 2010, p. 6).

The 'Stand Up for Climate Change' video competitions were held in 2016, 2017 and 2018. Calls for entries were circulated through numerous email listservs, message boards and social media outlets. The announcement noted that successful entries will be those that can 'find the funny' while relating to climate change issues in less than 3 min. Entries that were produced within the previous calendar year to the deadline were considered. Panels of faculty, graduate and undergraduate students then ranked the submissions each year and winners were determined from an equally-weighted ranked pool. Across the three competitions, thirty-one entries were received (N = 31) from eight different countries.

For examples, Jeremy Hoffman from Oregon State University in the United States won third prize in the 2016 contest with a piece called 'The Sound of Skeptics'. This was a satirical parody to the tune of Solomon et al., 2007 classic 'The Sound of Silence'. Hoffman described his motivation behind the composition as a creative way to approach "the struggle of the climate science community in dealing with the increasingly loud but remarkably small population of 'climate change skeptics' that willingly deny the impacts of anthropogenic CO2 emissions on global climate change". In addition to the use of music as a mode, he and his musical partner donned wigs to humorously resemble the original artists of the song. In 2017, the composition 'The Summit' by Giovanni Fusetti and Tejopala Rawls from Australia won first prize. This was a piece where nine performers dressed in formal suits acted as delegates to 'this country' and 'that country' in ongoing international climate negotiations. They satirically debate about terminology and action at the ocean's edge while the waters rise around them. While arguing about 'multilateral' and 'bilateral', and 'committee' and 'sub-committee', they eventually are silenced by the enveloping waters just as 'the chairman' calls for a vote. The final text reads, "It doesn't have to go like this … it is time for action".[6] In 2018, Madeleine Finlay and Sarah Barfield Marks from the United Kingdom won first prize with their creative take on 'Peer Review' where they pointed out the contrasts and confusion between relevant expert reviews and the court of public opinion.

The comedy shows were held in March 2016 and March 2017 respectively. These were a mix of live performances with some pre-produced video compositions.[7] Both performances occurred in spaces that each accommodated approximately 150 people. The majority of the student participants across both events were Environmental Studies majors with little to no experience performing comedy.[8] Other major areas of study included Astronomy, Atmospheric and Ocean Sciences, Communication, Ecology and Evolutionary Biology, Geography, International Affairs, Journalism, Political Science, Sociology, Theater and Dance. In these two performances, participants either chose to perform individually (in each case performing stand up) or in small groups of two to five people (performing stand up, improv or sketch comedy). In year one, participants devised compositions on any theme or topic they chose. Each composition just needed to use comedy as the communication vehicle about a particular dimension or set of dimensions related to climate change. In year two, participants created works that related to the theme of communicating humanity's relationship with energy and climate change. In both years, all participants were required to carefully consider and articulate who was their imagined/intended primary audience and what was the principle message they sought to communication through each composition.

As an example of a multi-modal performance piece, two students, Trevor Bishop and Tanner Biglione, created an Academy Awards skit, cutting to the portion of the event when the award for best picture is announced. The skit began as the ceremony played a video segment of a fictitious film called 'Wild Pollution' created by Bishop and Biglione where a protagonist is out in the wild catching and corralling various forms of garbage and waste (e.g. cans, paper, glass). The lights were then raised, followed by the live emcee announced the winning film. Drawing on the February 2017 Academy Awards mishap where 'La La Land' was mistakenly awarded Best Picture before the organizers corrected the announcement, the live emcee performed a similar mishap before then naming the fictitious film 'Wild Pollution' the winner of Best Picture. Bishop and Biglione – the fictitious Director and star of the film – then went onstage to accept the award. Bishop exclaimed, "Thank you, thank you, we understand we deserve this significantly more than any of the other films submitted", and Biglione followed, "I mean what can I say, this is an incredible honor and we really just gave the people what they wanted … TRASH". Bishop then continued, "We would like to thank our President for removing any kind of environmental regulations, making this documentary possible", and Biglione finished by saying, "We would also like to thank the people. Without your gross negligence, we would not have been able to observe these pollutants in their unnatural habitats." The two then exited the stage to crowd applause. Through this exaggerated composition, the multi-modal piece seeks to communicate a serious message about the consequence of low regulatory environments matched with cultural consent through a humorous case of wild trash.

Participants prepared for these performances by discussing contemporary peer-reviewed materials about climate change communication, by completing performance-based exercises in the months preceding the event, and through conversations with visitors who shared

[4] More information on the video competition can be found here: http://insidethegreenhouse.colorado.edu/news/winners-announced-2016-comedy-climate-change-video-competition and here: http://insidethegreenhouse.colorado.edu/node/2017 while more information about the live performances can be found here: http://insidethegreenhouse.org/project/comedy-climate-change.

[5] Approximately 200 people attended the two events, thus our audience survey response rate was roughly 23%.

[6] http://www.insidethegreenhouse.org/short-films?field_sub_category_tid=All&combine=summit&field_age_range_value=All&field_length_value = .

[7] These pre-produced videos included the contest winning entries along with some previous Inside the Greenhouse works, and some additional outside contributions.

[8] This lack of experience posed a particular challenge, as many theatre professionals deem comedy to be the hardest to master (and the most obviously exposed when done poorly).

varied expertise in communication.[9] From these performance activities, participants then assembled a collaborative list of 'what was funny' from their actions. Prominent were acknowledgment that exaggeration, full commitment, the introduction of ridiculous ideas into an otherwise logical world, suspense, surprise, clever recognition of truths, imitation (e.g. the human as mechanical), honesty, timing, incongruity, absurdity and specificity all played parts in constructing effective comedy. These were then mapped onto the themes of awareness, efficacy, learning/knowledge, feelings/emotion/affect, and engagement/problem solving.

Participants in each event completed post-event surveys with four open-ended questions. In addition, audience surveys were administered immediately after each performance. Attendees were asked how much comedy might have succeeded in making them think, feel and engage with climate change, whether the use of comedy seemed to trivialize issues associated with climate change, and if they felt that comedy could make a useful contribution to ongoing climate change conversations. A final question solicited open-ended responses, asking for any observations or suggestions that audience members had for continued avenues of exploration at the nexus of climate change and comedy. Together, these surveys provide insights on the practice-based research involved in these participatory activities, by identifying and describing successful and unsuccessful techniques[10] deployed to achieve stated objectives of climate communication through comedy.

4. Analysis: 'Comedy is either easy or impossible'[11]

We analyze performances and responses through the established themes in order to examine how successful these comedy endeavors may have been for the participants as well as for the audiences. We find that context-dependent honesty, timing, exaggeration, surprise, clever recognition of truths and full commitment all compelled the efforts in the 'Stand Up for Climate Change' initiative forward in terms of five key themes of awareness, efficacy, feeling/emotion/affect, engagement/problem solving, learning and new knowledge formation. We also find that the project design provides an overall experience in which students could experiment with ways of finding traction for the communication of climate issues through comedic approaches. Moreover, the capacity- and confidence-building dimensions of the enterprise add further texture to the endeavor. However, we find that this emerged along with a number of ongoing challenges that we elaborate below.

Early in the process, the challenges of combining comedy and climate change through the theme of feeling/emotion/affect were abundantly clear. A number of students voiced concern that the remit of comedic delivery on climate-related content was as easy as mixing oil and water, where it was very difficult to make something so serious also funny. They also expressed anxiety about the challenge to effectively connect on climate change through humor. These expressions drew on the complex affective/emotional costs and benefits that can be associated with acting or thinking outside one's comfort zone. Chappell has found this to be "a highly desirable and necessary hallmark of `independent and self-motivated' individuals" (2006, 26), however Bissell has pointed to nuances of (dis)comfort as it relates to creativity and capabilities (2008). With these complexities in mind, a participant reported, "This project took me out of my comfort zone", while another recounted the "anxiety of performing live". However, that same participant then related a sense of satisfaction and "boost of confidence speaking in front of large groups … it honestly doesn't get much scarier than doing stand-up in terms of anxiety around social performances". While the impacts of (dis)comfort and creativity are not resolved here (nor in the larger emotional geographies and psychology literature), these comments are consistent with findings from Spatz (2015) regarding successful knowledge generation through techniques and practices of embodiment. Furthermore, participant and audience responses, along with observations of the process point to the capabilities of humor to provide relief as an embodied and affective coping practice amid an otherwise distressing set of considerations (McCormack, 2003).

As such, the both disarming and subversive power of comedy served to open up every day spaces for reflections and expressions of opposition and resistance to contemporary climate change causes and consequences. From this, while the potential for distraction and trivialization as well as an acceptance of consumer capitalism lurked throughout the undertakings, the power of comedy as a vehicle for social, political, economic and cultural change was revealed. One participant reflected, "Laughter may cause people to drop their defenses and be open to listening to other ideas and points of view" while an audience survey respondent commented that "humor can be used to motivate problem solving, which is exactly what we need more of now". While six participants performed stand-up comedy, the other seventy-six live performers performed elements of improv and sketch comedy. A subset of these performances found familiarity and resonance through popular televisions shows. For example, 'Always Sunny in Boulder, Colorado' by Sean Christie, Emily Buzek, Clarissa Coburn and Alex Posen in 2016 played on the 'Always Sunny in Philadelphia' sitcom but drawing on climate change themes. In 2017, 'The Bachelorette' by Andrew Taylor-Shaut, Yue Li, Gustaf Brorsson, Maggie Patton, Hannah Higgins and Enric Sabadell anthropomorphized coal, oil, natural gas and the sun vying for a long-term relationship with Mother Earth.

Participant survey feedback consistently points to the value of comedy as a vehicle for learning and new knowledge formation, as they also recognize the risks of trivializing a critically important issue. These survey responses also consistently note the central importance of audience and context when considering whether compositions were successful. One participant reported that "it showed me how fun climate communication can be, which helps to reframe the whole conversation in a way that feels more manageable", while another shared that comedy "made it easier to bring up the subject of climate change without being depressing". Participant survey feedback also touches on awareness. A participant wrote that this "different form of climate change communication allows communicators to reach broader, otherwise disinterested audiences". As such, many of the participants chose to focus on social cultures of partying and celebration. For example, 'Teach it 'n preach it' in 2016 by Elana Selinger, Alaire Davis, Greg Chancellor and Blake Ahnell portrayed a conversation about climate impacts while socializing one evening in a friend's apartment. Based on what the audience laughed at during the scene, the humor appeared to be context-dependent and stemmed from the honest portrayal of their daily lives in which one person lamented about the impact on global warming of melting snows as two others entered wearing full snowboard gear carrying their boards. They were told by the climate-worried roommate that their beloved snow had melted due to increased temperatures on the Earth's surface. In another performance that same year called 'Party on the Hill' [referring to a neighborhood called University Hill in Boulder Colorado] creators Blaine Hartman, Tommy Casey, Meagan Webber and Ashley Seaward perform different archetypal characters – a 'frat guy', a 'hippy', a 'Starbucks girl' and an

[9] Visitors included Professor Max Liboiron (Department of Geography, Memorial University of Newfoundland), Professor Peter McGraw (Psychology and Marketing, University of Colorado), Professor David Poulson (Knight Center for Environmental Journalism, Michigan State University), Professor Zoe Donaldson (Department of Molecular, Cellular and Developmental Biology, University of Colorado) and Lauren Gifford (Department of Geography, University of Colorado).

[10] Technique here is defined as a way of carrying out a particular task, especially the execution of performance of an artistic work or a scientific procedure, a skillful or efficient way of doing or achieving something. In the field of performance, identifying techniques is one manner in which new knowledge contributes to the fields of interest and involvement/investment.

[11] This is a quote attributed to Woody Allen by United States Senator Al Franken (D-MN) on the floor of the US Senate on July 25, 2012: http://www.c-spanvideo.org/clip/3550697&newclip.

environmentally conscious student. They discussed environmental awareness and (dis)engagement, along with their different priorities for environmental conservation and stewardship in clever and context-sensitive ways. The conservative student chastised the hippy saying, “Dude, you're higher than sea-level rises,” cleverly chiding his friend while alluding to the problem of global warming contributing to rising sea-levels. In 2017, ‘A Greenie in a Greensuit’ by Clinton Taylor, Heddie Hall, Tori Gray and Forrest Dickinson portrayed a situation where two University of Colorado friends are visiting two other friends at another University on St. Patrick's Day. They are at a college party playing drinking games and debating varying campus cultures of environmental (un)consciousness. The humor derived from the exaggerated costuming of the two visiting environmentally-minded CU students (where that is a stereotype) who were dressed in full, skin-tight, green outfits. Another source of the humor was their full commitment in wearing these ridiculous costumes while engaging in otherwise perfunctory conversation.

The student audience was nearly completely comprised of friends of the performers resulting in an exuberantly supportive and enthusiastic audience. The crowd generously laughed as much for an actor who forgot her lines as they did for one who landed a joke. This bath of acceptance seemed to ease the performers' collective nerves and allowed them to relax into the experience and enjoy it. Not only did the audience seem to be bolster their friends’ confidence, but the audience seemed to also be engaging with the material being performed in a manner that invigorated the meaning of what the students were presenting. A refence to a given political figure drew ire from the audience in the form of jeers. A stand-up comic deprecating himself for not eating an environmentally-friendly plant-based diet due to student poverty drew sympathetic chuckles. This seems to be an example of active spectatorship that Jacques Rancière explores in *The Emancipated Spectator* in which he no longer regards the audience as a passive recipient of a performance, but as an active participant with political agency capable of co-creating knowledge and meaning making through their co-creation of the event (Racière, 2009). Audience reactions confirmed and modified the collective meaning that seemed to result from the live performance experience. At Stand Up for Climate Change, both performers and audience collaborated in the creation of an event that linked the interrogation of a wide variety of climate issues with comedy and shared laughter.

The products in the show, participant and audience feedback through survey data, and observations indicated that the experiment was seen to raise awareness as the performances and winning videos provoked new perspectives and new ways of considering climate change. After the event, further feedback from the students and analyses of the performances pointed to productive experimentation in regards to themes of efficacy and engagement/problem solving. One participant commented, “It helped me not only become a better climate communicator, but also built my confidence in the academic and social realms”. Another recounted, “Never in my whole life have I been so nervous and stressed out … and yet, I've never walked away from a presentation or in a class event feeling as proud of myself as I did [when completing this work] …” Another participant shared that “the project has made me think more openly about the many ways people can establish common ground between one another surrounding important issues such as climate change”. An audience survey respondent commented, “In the realm of comedy and satire, it seems that regardless of your personal biases or political affiliations, anyone who doesn't take themselves too seriously can participate and appreciate the art form. In other words, the approachability of humor transcends … barriers because of the humble pretense that funny is *funny*”. Another audience survey reported, “It is a unique and seemingly unconventional way to reach out to people about this issue”. As such, we found that engaging college-aged youth in a solutions-oriented performance in regards to climate change served to increase youth levels of empowerment and promote commitment to positive action. This is consistent with research by Katharine Stevenson and Nils Peterson who found that by giving youth a feeling that solutions to climate change are within their control, the resulting hope can motivate behavior that benefits other people, their local community, and the world (2016). These findings also cohere with Maria Ojala's research that has found that actively involving adolescents in climate related issues then promotes their problem solving (Ojala, 2012).

Many performances gained traction through familiarity of popular US television game shows. For example, in the lead up to the 2016 US Presidential election, Jeremy Stein, Curtis Beulter, Garrett Hernandez-Rimer and Caitlin Lizza created and performed ‘Presidential D(eb)ating Games’ where Donald Trump, Bernie Sanders and Hilary Clinton competed to be chosen by Mother Nature. The student performing as Sanders cited his reason for being chosen as the high albedo of his grey hair that reflected incoming short radiation back out to space to prevent the Earth from warming. Here the tension surrounding the 2016 US presidential election provided a fertile context for humor. As another example, Tiana Wilson, Alec Nimkoff, Joseph Meyer and Reghan Gillman played off the popular show ‘Jeopardy’ to perform ‘Climate Jeopardy’ with climate change answers and questions. When asked what was a change that starts with the letter “C”, contestant Hilary Clinton responded, “Campaign. My campaign.” This content cleverly alluded to the accusation that she changed her mind on key issues within her campaign and that she was so obsessed with her own campaign. A final example was the futuristic ‘2050 Price is Right!’ by Edwin Chambers Zachary Lautmann, Katelynne Knight, and Jennifer Stodgell where contestants ‘Jen’, ‘Dom’ and ‘Billy’ competed for prizes. Part of the humor was derived from the timing, having the year be 2050, and the surprise of learning that their “beach” holiday they had won would be in the now warm and sunny shores of Alaska.

The process and products therefore made evident the power of comedy to lubricate sites of subversion as well as sites of distraction. Nair (2016) found that emotions (in particular hopeful appeals) are persuasive in shaping climate change communication and engagement. Those involved observed that oft-involuntary or sub-conscious laughter – an immediate meter of comedy's success or failure – sometimes only moves considerations part of the way toward needed political and social change (e.g. Chattoo, 2017). The social function or philosophical value of humor and comedy (apart from giving pleasure and entertaining) remained an open consideration after these ‘Stand Up for Climate Change’ experiences. There is evidence that humor and laughter can help to elicit action (e.g. Berlant & Ngai, 2017; Elias & Parvulescu, 2017) reduce stress in adverse environments (McGraw & Warren, 2010; Martin, 2002), alleviate suffering (Osnes, 2008) and effectively attend to grief and pain (Keltner & Bonanno, 1997; Zillmann, Rockwell, Schweitzer, & Sundar, 1993). There are also indications that humor and comedy may prove to lessen the importance and seriousness of issues (McGraw et al., 2015; Valdesolo & DeSteno, 2006).

Mikhail Bakhtin developed a theory of carnival to draw out the argument that humor and comedy, more broadly entertainment, can possess great power to distract (Bakhtin, 1984). In this approach, carnival is viewed as a vehicle of an authentic proletarian voice contending with oppressions of the ruling classes, where carnival represents a temporary suspension of social rules, codes of conduct and deference. However, the relief encountered in revelry then serves to pacify, as dissention therefore becomes contained within this acceptable arena of revelry. As such, the power to produce social change diminishes, and (comedic) performance effectively squelches the authorities and injustice that such activities originally seek to confront. Much like the impacts of neoliberalism has been seen to produce individualization that then effectively atomizes social, economic and environmental movements for change (Littler, 2009), humor and comedy can then run risks of absorbing power to produce social change relating to climate change. In this regard, Stephen Greenblatt has pointed out, “this apparent production of subversion is … the very condition of power” (1988, 44–45) while Andrew Stott has posited that inversion and misrule, then exist within a confined space of “licensed transgression”

(2015, 35). The ability of comedy in recent decades to cause discomfort to those most powerful stands provides a subversive riposte. In Burma, members from a famous traditional comedic troupe, known as the Moustache Brothers, were imprisoned for performing various jokes at an auspicious public gathering at the compound for Aung San Suu Kyi on the Burmese Independence Day celebration in 1996. Likely proof that these comedians acted very much outside the overall design of those in power resides in the harshness of their sentence, seven years of hard labor in a stone quarry at a prison for hardened criminals. All other prisoners wore chains between their legs, but solid iron bars were placed between the legs of the comedians, making sleep and work extremely difficult (Osnes, 2008).

This negotiation of power and the temporary suspension of social rules governing that power was brought into play figuratively and literally in the second year of experimentation under study. One student doing standup took to task a prominent US politician for his dismissal of climate change. In the weeks before, he shared his script for feedback and approval.[12] However, during the performance, the encouraging cheers from the crowd emboldened him, and in the absence of traditional class performance pressures he jumped script and insinuated off-color accusations about this politician. From back stage the professors intervened and gestured firmly for him to halt the performance and exit the stage, pulling him back into the social rules surrounding these particular events. In the following days, the student earned a lower grade because of the perception that his comments were distasteful. He replied that he understood, even though he pointed out that he had still worked diligently and rehearsed extensively for the performance. As a performer onstage, the intoxicating freedom he felt in that moment may have released inhibitions that led him to speak against his better judgment. In this example, Foucault's approach through biopower helps us to understand this interaction with humor as a politically-saturated and power-laden micro-event. The both liberatory and potentially damaging process revealed here contributed to a more nuanced understanding of how the use of comedy a live setting produce fora for the maintenance, contestation, construction and challenging of wider discourses.

A number of scholars and practitioners have argued that humor has the potential to productively spark awareness and engagement for people across political, cultural and social arenas on important social issues such as climate change (e.g. Chattoo, 2017). *The Laughter Report: The [Serious] Role of Comedy in Social Change*, published by the Center for Media and Social Impact at American University reviewed research and findings across multiple disciplines in an effort to understand the potential impact of humor on social change. The report highlighted multiple examples of positive social change resulting from humor initiatives. For example, a John Oliver episode of *Last Week Tonight* in 2015 is credited by many as "having influenced New York City officials to change their city's bail protocol", which Oliver asserted was previously used to lock up the poor, even when their guilt was not proven (Chattoo, 2017, pp. 4–5). Therefore, analyses regarding how humor and comedy may influence perspectives, attitudes, intentions, beliefs and behaviors in various settings on the topic of climate change is both needed and warranted.

Despite the general findings of advances made through these activities associated with the 'Stand Up for Climate Change' initiative, it was also apparent that performances and artifacts walked a tightrope between sites of subversion and sites of sedation. While seeking to offer counterweights to common vernacular and thought regarding contemporary action on climate change, many participants ran risks of appearing to engage in radical innovation but effectively re-inscribing norms of climate injustices and inequalities perpetrated across gender, class and culture. These efforts were then seen to potentially foreclose on the possible re-imaginings that participants sought to articulate and create (Foucault, 1978). Yet in taking these latent prejudices and assumptions out of hiding and putting them on the stage, they thereby became visible, uncomfortable manifestations of what lurked beneath daily behaviors and societal structures, and thereby have the potential to spur conversation that could lead to possible resolution, healing and progress. And one participant observed that the process "showed me how hard it is to think of good ways to discuss this issue without being too 'in your face'". However, an unspoken challenge that this comment revealed was one of being 'in the face' of power too little.

Morreall has written that resilient humor can effectively provide defense against tyranny (1983). But these study findings contribute to ongoing interrogations of how the seductiveness of comedy and laughter can nonetheless remain effectively encased in the confines and logics of instrumentalized, commodified and reified the structures and processes of late capitalism, and therefore innocent of relations to power (Adorno, 1991; Horkheimer & Adorno, 1947). As such, the 'Stand Up for Climate Change' project and wider efforts to address climate challenges through comedic communication tools continue to brace against and lean into the forces of both subversion and sedation when assembling and carrying out their communications work. It is important to remember, however that appearances of relief that can be perceived as moments of sedation can also be useful as moments of respite from which to draw strength to confront tyrannical behaviors through comedy in moments to follow. Going forward, a resolute mindfulness of the longer struggles involved – and how comedy can serve as both salve and seed to help to attend to power-laden processes that foster business-as-usual carbon-based capitalist practices that contribute to 21st century climate change. Through comedic communication, potential sites of powerful resistance and legibility amid adversity remain sites of struggle but are struggles worth continuing to interrogate and pursue going forward.

5. Conclusion: meeting people where they are

Through this case-study analysis of communications about climate change through comedy, we provide new perspectives into awareness, efficacy, learning and coping strategies-as-response to shared dread and uneasiness about the challenges that anthropogenic climate change carries. On the surface, anthropogenic climate change is one of the most prominent and existential challenges of the 21st century and this can be a frightening notion where humor and laughter then appear inappropriate and incoherent. However, affective and emotional geographers have provided insights into the ability of laughter to enact, disrupt and reconfigure relationships (Elias & Parvulescu, 2017; Emmerson, 2017) at the human-environment interface.

Our study here seeks to further advance these considerations, particularly as it related to creative climate communications. Our research shows that it is clear that context and content both matter to the efficacy of humorists ('claims makers') and to their messages ('claims'). Jokes emerge from complex and dynamic sub-political spaces and from historically-contingent social frameworks.

Anthropologist Mary Douglas – in her work on joking relationships in traditional cultures – has pointed out that "all jokes are expressive of the social situations in which they occur. The one social condition necessary for a joke to be enjoyed is that the social group in which it is received should develop the formal characteristics of a 'told' joke: this a dominant pattern of relation is challenged by another" (1975, 98). Through a dialectic of connectivity and difference (Castree, 2010), collective ways of knowing through humor can unleash productive and creative forces like laughter from humor. Comedy can also bring to light power configurations and relations (Williams, 2016). For example, after a heavy Washington D.C. snowstorm in February 2015, US Senator James Inhofe (R-OK) carried a snowball to the podium on the floor of the US Senate in an apparent effort to call the warming planet into

[12] It is worth noting that in these student-professor relations, there was a clear power asymmetry as the student solicited permission to perform the content.

question. As he pulled his snowball from a clear plastic bag, he commented "In case we have forgotten – because we keep hearing that 2014 has been the warmest year on record – I ask the Chair: 'do you know what this is?'". Inhofe then waved the snowball and said, "It's a snowball, from outside here. It is very, very cold out, very unseasonable". He then threw the snowball underhand to the Senate President Bill Cassidy (R-LA) saying "here Mr. President, catch this", while chuckling in delight. Originally airing on C-SPAN, this went viral through news media and social media.[13] This stunt was prompted by Inhofe's motivation to disprove anthropogenic climate change by way of a cold front passing through the US Capital in the winter of 2015. Though some saw this as clever questioning, most who viewed it saw it as hilariously flawed logic. This event also generated public discourse of Senator Inhofe's many ties to fossil fuel industry power brokers. Overall, the escapade demonstrated yet again that comedy could powerfully cut many ways as it flows through the shared social body. This episode also relates to the notion that "Comedy helps us test and figure out what it means to say 'us'" (Berlant & Ngai, 2017, p. 235) where a joke like this may demonstrate distance rather than relation to the intended humorist.

Comedy helps to bridge between levels of social systems: micro, meso, and macro. These multi-scale comedic approaches then help to explore how agency, social structure, culture, institutions, inequality, power and spatial dimensions of these issues shape how we address 21st century climate change (Ehrhardt-Martinez, Rudel, Norgaard, & Broadbent, 2015). In so doing, power saturates social, political, economic and institutional conditions that shape these relations and interactions (Wynne, 2008). Through the wider and context-sensitive lens taken up here, we have begun to interrogate how these interactions shape and threaten/manage the conditions and tactics of our social lives (de Certeau, 1984) and how knowledge, norms, conventions and (un)truths can be maintained and/or challenged (Foucault, 1980). However, additional considerations of the affect help to understand different entry points into awareness and efficacy and into diverse ways of knowing. Affective politics then "affirm Foucault's important caveat – 'it is not that life has been totally integrated into techniques that govern and administer it; it constantly escapes them' (1978, 143)" (Anderson, 2012, p. 41). Moreover, comedy can pull on intersecting considerations of biopower and affect to more capably flesh out dynamics coursing through lived experiences, learning and life (Thrift, 2004).

In contrast to brash imposition of disciplinary techniques and commands, comedic approaches through the 'Stand Up for Climate Change' drew from subtle power-knowledge regimes that permeate and create what becomes 'permissible' and 'normal' as well as 'desired' in everyday discourses, practices, and institutional processes (Foucault, 1975; Van Assche, Beunen, Duineveld, & Gruezmacher, 2017)). In this event, recommendations for climate engagements were smuggled in through the congeniality of this informal comedy event. Here we analyze the extent to which these new discourses and framings confronted relationships of power, and where knowledge and meaning arise through discursive struggle (Hall, 1988). Insights from Michel Foucault (1980) and from Ben Anderson (2006; 2017) here in particular help to shed light on the interactions of power and knowledge at the human-environment interface. Drawing on their contributions helps to access these wider theoretical considerations.

Going forward, more examinations of creative and effective projects and practices on climate change are warranted; more efforts also must be made to build capacities and provide feedback to practitioners and everyday citizen communities to enhance climate awareness and engagement. While texts have often been the primary means of climate communication, images (Doyle, 2007) and participatory and experiential activities (Osnes, 2014) have been acknowledged as powerful avenues through which people consider climate challenges. Moreover, extensions into entertainment media and interactive platforms have been increasingly recognized as important facets of making climate change meaningful (Boykoff, 2011).

Amy Luers (2013) has called for experimentation as a pathway to empowerment regarding climate change, and developing a learning culture to prioritize effective engagement methods. Furthermore, Mike Hulme has commented that research "must stop viewing global change as yet another opportunity to apply our existing tool kit. We must view the problems of global change as an opportunity to better recognize the limitations of current tools, and as a test bed in which to develop new formulations and analysis methods" (2009, 279). In this spirit, the analysis of the 'Stand Up for Climate Change' initiative furthers our understanding of ways in which experiential, emotional, and aesthetic learning inform scientific ways of knowing about climate change. This case study work helps to concretize considerations put forward by Ben Anderson to "stage an encounter between 'affect' and 'biopower'" to then more capably navigate the contours of 'a politics of life' (Anderson, 2012, p. 28). Moreover, the 'Stand Up for Climate Change' initiative wrestles with Peter McGraw's humor code and his theory of benign violation, to examine how humor and comedy find traction in public discourse (McGraw & Warner, 2014). Particularly with climate change – one of the most polarized issues in contemporary US culture and politics – this can be seen to open up spaces of engagement that are otherwise not accessible.

By examining comedy as a multi-modal communication pathway to meet people where they are on climate change, the 'Stand Up for Climate Change' initiative has worked to tap into complementary ways of knowing in order to more effectively develop strategies for effective and creative communications about climate change in the 21st century, specifically by experimenting in key areas of awareness, efficacy, feeling/emotion/affect, engagement/problem solving, learning and new knowledge formation.

Conflicts of interest

None.

Acknowledgments

The authors thank Inside the Greenhouse collaborator Rebecca Safran. They also thank the ATLAS Black Box Experimental Studio in the Center for Media, Arts and Performance at the University of Colorado for hosting the 2016 event. They thank the Spanish Ministry of Science & Technology, along with Professor Bienvenido Leon, for supporting Boykoff in presenting an early version of this work at the 2017 Association of American Geographers (AAG) conference. They thank CliSAP at the Universität Hamburg, along with Prof Michael Bruggeman, Dr. Stefanie Walter, Fenja de Silva-Schmidt and Ines Schaudel, as Boykoff presented another early version of this project for feedback at the June 2017 'Re-defining the Boundaries of Science and Journalism in the Debate on Climate Change' workshop. They thank Prof Jennifer Fluri and Prof Jessie Clark for organizing the AAG sessions and the consequent Special Issue of Political Geography.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.polgeo.2018.09.006.

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[13] The segment can be seen here: https://www.washingtonpost.com/video/national/sen-james-inhofe-brings-snowball-to-senate-floor/2016/06/02/3ca067d0-28da-11e6-8329-6104954928d2_video.html?utm_term=.262166b9b288.

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