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## A Case Study of Arguments at the System Level

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Résumé de l'article

J'examine les arguments au niveau du système et j'explore la controverse sur la question de savoir si les climatologues devraient voler. Je documente la connaissance des participants d'un argument sceptique selon lequel, les scientifiques ne peuvent pas témoigner de manière crédible de l'urgence climatique parce qu'ils volent. Je montre comment cet argument a été avancé par des défenseurs de l'action pro-climat et comment certains climatologues ont développé un raisonnement parallèle, en avançant un cas complexe pourquoi ils seront plus efficaces dans la controverse s'ils volent moins. Enfin, je passe en revue certaines stratégies déployées par les défenseurs pour utiliser les arguments des autres contre eux. Je soutiens que ce n'est qu'en s'occupant de la construction d'arguments au niveau du système que nous pouvons comprendre comment les défenseurs en viennent à connaître les ressources d'arguments disponibles dans une controverse et à réfléchir stratégiquement sur leur utilisation. Je fais un appel à plus de recherche sur les arguments au niveau du système.

# Should Climate Scientists Fly? A Case Study of Arguments at the System Level

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**Abstract:** I inquire into argument at the system level, exploring the controversy over whether climate scientists should fly. I document participants' knowledge of a skeptical argument that because scientists fly, they cannot testify credibly about the climate emergency. I show how this argument has been managed by pro-climate action arguers, and how some climate scientists have developed parallel reasoning, articulating a sophisticated case why they will be more effective in the controversy if they fly less. Finally, I review some strategies arguers deploy to use the arguments of others against them. I argue that only by attending to argument-making at the system level can we understand how arguers come to know the resources for argument available in a controversy and to think strategically about how to use them. I call for more work on argument at the system level

**Résumé:** J'examine les arguments au niveau du système et j'explore la controverse sur la question de savoir si les climatologues devraient voler. Je documente la connaissance des participants d'un argument sceptique selon lequel, les scientifiques ne peuvent pas témoigner de manière crédible de l'urgence climatique parce qu'ils volent. Je montre comment cet argument a été avancé par des défenseurs de l'action pro-climat et comment certains climatologues ont développé un raisonnement parallèle, en avançant un cas complexe pourquoi ils seront plus efficaces dans la controverse s'ils volent moins. Enfin, je passe en revue certaines stratégies déployées par les défenseurs pour utiliser les arguments des autres contre eux. Je soutiens que ce n'est qu'en s'occupant de la construction d'arguments au niveau du système que nous pouvons comprendre comment les défenseurs en viennent à connaître les ressources d'arguments disponibles dans une controverse et à réfléchir stratégiquement sur leur utilisation. Je fais un appel à plus de recherche sur les arguments au niveau du système.

**Keywords:** argument, argumentation, argumentation theory, argumentative content knowledge, argument strategy, climate controversy, controversy, ethos, polylogue, systems thinking

## 1. Introduction

Argumentation theory is conspicuously interdisciplinary, and I distrust attempts to neaten it up—even when those attempts are reinforced by traditional authority ("logic, dialectic, rhetoric") or alliteration ("process, product, procedure"). Instead, I believe we'd demonstrate more self-knowledge, and be more welcoming to new arrivals, by allowing that we are all immigrants to argumentation theory, arriving with whatever baggage we've managed to carry with us from our home disciplines. Each discipline contributes its own enduring questions, its currently fashionable theoretical frameworks, and its well-practiced methods: in sum, its own hobbyhorses.

Reviewing the keynotes at argumentation conferences over the years (and work that ought to have been keynoted), it seems apparent that what my discipline, communication, contributes to argumentation theory is our preoccupation with *controversy* (Goodnight 1991; Jacobs 1999; Leff 2000, 2003; Kock 2007; Kauffeld 2009; Zarefsky 2009; Tracy 2011; Hample 2019; Jackson 2019). This means we are comfortable with disagreement, even the kind labelled "deep," since that is the ordinary state of affairs on controversial topics. We are centrally concerned with the persons and communities that sustain and are sustained by arguing. Since these persons and communities need to count on controversy to justify decisions, controversy needs to be done right; our perspectives are (contrary to rumor) congenitally normative. And finally, we are interested in the inventiveness of argumentative activity—the ways it can make something new appear in public space. The mechanisms postulated for this creative force vary; our work has examined designing messages that enhance or diminish the conditions for their own reception (Jacobs 1999); creating a normative terrain shared between arguers by undertaking and imposing obligations (Kauffeld 2009); evoking situations where reasons can productively be exchanged (Leff 2000); making objections that destabilize taken-for-granted practices (Goodnight,

 

1991); and inventing new resources for managing disagreement (Jackson 2019). But we share a gut sense that making arguments is not a matter of filling in forms or following norms that have been set externally, whether by a rule-giver, society at large, or an argumentation theorist. Instead, we're confident that arguers themselves invent (at least in part) the resources they need for making arguments and the environments in which to make them.

In the present work, I want to add to the list another feature characteristic of communication research on argument: our scale. Every discipline has its own sense of micro and macro, carving out some region of the spectrum from morphemes to propositions to messages to less or more extended interactions to entire sets of interactions. The communication discipline's focus on controversy means that we tend to inhabit the larger end, including attention to what happens when large numbers of arguers are making arguments on a loosely defined and perhaps changing topic over long periods of time. My goal here is to push the upper boundaries even a bit further. I will leverage increasingly available "big data" to see what we can learn from pursuing system-level inquiry into argumentative activity. This study is thus exploratory. I examine the argumentative phenomena that become conspicuous when analyzing not individual arguments or even individual exchanges, but across large corpora of argumentative discourse. I hope by this to reframe some current questions in argumentation theory and to raise some new ones.

I will take for a case study the arguments swirling around the question of whether climate scientists should fly. A small corner of the vast controversy about the appropriate policy to address anthropogenic global warming, this issue has spurred both public consideration of what climate scientists' flying for research and conferences reveals about them, as well as sustained reflection within the scientific community (and academic community more generally) about whether flying needs to be reduced. Although a "small corner," the discourse produced on the issue is at the upper limit of what we can presently analyze by hand. To find out what arguers have been doing on this issue, I have gathered three sets of online discourse from 2010-2020:

- Corpus 1: a set of individual tweets with keywords "flying" and "climate," providing some assurance that many significant themes will be picked up;
- Corpus 2: a collection of blog posts, journalism and other longform discourse, where those themes can be more fully developed than a single tweet allows; and
- Corpus 3: a set of Twitter conversations about the issue, where we can observe interactions among individuals with different standpoints in the controversy.

Further details regarding corpus collection and analysis are included in the Appendix.

## 2. The skeptics' hypocrisy argument

*An Inconvenient Truth* is a convenient starting-point from which to trace the controversy. The 2006 film and accompanying book devote themselves to documenting (in the words of the subtitle) the "planetary emergency of global warming and what we can do about it"), in addition to constructing Gore's ethos as a committed, sympathetic, and knowledgeable spokesperson. The final six minutes of the film and sixteen pages of the book turn to the "what you can do about it." The list of individual actions is now familiar, including items like change your lightbulbs, insulate your house, buy a hybrid car, recycle, vote, and—in the book only—"reduce air travel." Opponents of action on global warming (called here, "skeptics") responded quickly after the release of the film. A group based in Gore's home state documented alleged transgressions against his own advice, and concluded: "as the spokesman of choice for the global warming movement, Al Gore has to be willing to walk to walk, not just talk the talk, when it comes to home energy use" (Mikkelson & Evon 2007).

We now recognize the hypocrisy argument as a commonplace of the climate controversy. Gunster et al. (2018a, b) have documented in print journalism the widespread presence of "individual lifestyle outrage" which uses an inflammatory rhetorical style to solicit "moral judgment, condemnation, and outrage." Automated analysis of the tweets in Corpus 1 confirms this view; the most prominent topic in that discourse has *elite hypocrites* flying to

*Davos* in *private jets* in order to *tell* everyone else what to do. Politicians (Bernie Sanders, Catherine McKenna), celebrities (Leonardo DiCaprio, Emma Thompson) and climate activists (Greta Thunberg, and always Al Gore) come in for special ire. The hypocritical behavior of these elites includes owning mansions and driving limousines, but especially flying (Gunster et al. 2018b).

Climate scientists are relatively minor targets for skeptics; of the approximately 200K tweets with negative sentiment in Corpus 1, only 654 mention scientists. But when they are targeted, they receive like treatment. Skeptics take notice of them in short expostulations:

> No more log/wood burners maybe NO one talks about banning aeroplanes indeed climate scientists and politicians are quite happy to fly all over the place to tells US what to do about saving the planet.!! When they get the act together I will be convinced. #henley [C1]
>
> The haughty, self-important Prof. [whose flying was under discussion], like so many other noisy AGW advocates are hypocrites, HYPOCRITES, **HYPOCRITES!** [C2]

and in long disquisitions, like one blog post (with 260 comments) promising an "EXCLUSIVE" investigation "bringing the stunning hypocrisy of a climate conference out into the open" [C3]. (The skeptic documented the conference griping and republished the full program showing scientists from Bangladesh, Israel, Malawi, Italy, Costa Rica and the east coast of the United States showing up in California.)

The core of skeptics' hypocrisy argument is, as Walton (1998) pointed out in his work on the ad hominem, an alleged pragmatic inconsistency between scientists' utterances in the controversy and their behavior in the rest of their lives. This inconsistency is often expressed through maxims that emphasize the need for, or absence of, coherence between words and deeds: "'do as I say, not as I do,' practice what you preach, lead by example, walk the talk, actions speak louder the words, put your money where your mouth is." What evidence do skeptics offer for scientists' inconsistency? Often, none; scientists' actions and words are put forward as if common knowledge, as in the first sample above. Their flying, when mentioned, is generally for a specific climate-related confer-

ence (Poland, Paris, COP14) or research purpose (Antarctica). By contrast, the scientists' talk is almost never directly referenced. Instead, it is characterized: as overbearing ("tell, preach, lecture, push"), intrusive ("scream, screech," or as in the second sample above, "noisy"), baseless ("claim, propaganda") or mercenary ("sell, hype").

While skeptics do not elaborate the premises of their hypocrisy argument—do not put much effort into answering Toulmin's "what do you have to go on?" question—they do work harder to the conclusions that can be drawn from the scientists' inconsistency, answering "so what?" Table 1 and Figure 1 summarize skeptics' reasoning.

| **Conclusion** | **Examples** |
|---|---|
| 1. Don't believe | Why do any climate scientists still fly? It's almost as if they don't really believe that there's a CO2 climate crisis [C1].<br>Climate scientists lack conviction – why do they fly to meetings & expect others to stop flying/driving/etc [C1].<br>When [people] point out the hypocrisy of climate alarmist jetsetting around the world for these conferences[, t]hey're saying if they truly believed what they preach, they wouldn't be increasing their carbon footprint by jetting (or boating, train-ing, car-ing or any other form of CO2 spewing transporting) off all over the world, they'd hold their conference in the virtual space which would have minimal impact on their carbon footprint. They don't hence they don't really believe that which they preach [C2]. |
| 2.1 Self-interest | Yes all those scientist that will absolutely be out of job if there is no longer a climate crisis, but go ahead all the while those making all the money off this fly around in private jets have multiple mansion and continue to live like they don't care but certainly want you to! [C1].<br>For the last several decades, a bunch of professors and other academics who merely study climate…realized that driving up the fear of global warming could give them prestige, research grants, travel packages, and who knows what other benefits. All these conferences and other jet-setting adventures were the desired outcome of their efforts – not an undesirable byproduct of it [C2]. |
| 2.2 Hoax | Terrific Acting. Hypocrites. Climate Scientists, Politicians, Actors fly all over the World spewing CO2 into the Oceans. Climate Change is a Hoax. It's a Ponzi Scheme. Biggest Hypocrites [C1]. |

| | |
|---|---|
| | No-one in the activist camp actually believes that catastrophic planetary warming will result from unchecked CO2 emissions. This may seem a weird thing to say in view of the public pronouncements, but look at what they do…. I have reluctantly come to the conclusion that this is a lobby which is seeking to achieve deindustrialisation through the excuse of global warming. To them, global warming is not a global problem or crisis, it is simply a cause to use as an organizing and radicalization tool [C2]. |
| 3. Hypocrites | That's all the Big Climate Change Politicians, Scientists and actors do..... they all fly in big planes and drive big cars, biggest hypocrites on our planet [C1].<br>Face it, you are just another arrogant, useless, thick, over-promoted hypocrite. Be like your hero's Harry and Megan and buy some carbon credits and then all will be well! Or keep your moronic thoughts to yourself and do us all a favour. [C3]. |
| 4.1 Elite | celebs & scientists fly around the world to latest climate meetings but we must live in mud huts. #SCUM [C1].<br>You can't fly coach & then ride around on limos while you're at the climate conference! How peasant-like [C1]. |
| 4.2 Double standard | Actually living a low carbon lifestyle is what the peons are supposed to do, not the elites. Guess who decides who the elites are? [C2]<br>Hypocrites always have an excuse why they should be excused from the rules that they wish to impose on the rest of society. If you actually thought carbon dioxide was a problem, you could always telecommute. Then again, your actions show that you don't believe CO2 is a problem either [C2]. |
| 5. Not credible | You have a credibility problem when the climate scientists travel in private jets [C1].<br>Climate scientists fly all over the place which they would never do if the threat were real. Ignore those who project fanatical paranoia to make you feel guilty & threaten your happiness/joy [C1].<br>How can anyone take seriously anything any climate scientist says when you people don't practise what you preach? [C2] |
| 6. No emergency | When 'climate scientists' like David Suzuki who own multiple homes and constantly fly all over the world start living as if we're in any sort of danger I'll start believing them [C1].<br>I'm sick of this climate change hoax I wonder if the scientist will fly on jets to their destination to study the pollution they just expelled. If they walk to France I will think about their stupid planet warming claims [C1]. |

*Table 1: The Skeptics' Hypocrisy Argument*

One way to resolve an inconsistency between "walk" and "talk" is to infer that the scientists do not actually believe what they are saying. Assertions that scientists do not believe in the *existence* of climate change are rare; instead, the emphasis is on scientists' lack of confidence in a climate *emergency* [1]. In an emergency we expect people to take extraordinary actions, e.g. to run to put out a fire. When climate scientists continue business as usual, even continuing activities that they themselves say will make the emergency worse, skeptics find it hard to credit their statements. Their conclusion: there really is no emergency [6].

The inconsistency between "walk" and "talk" could still be puzzling, however, so some skeptics go on to propose explanations for why scientists are saying things they don't believe. The narrowest explanation offered is that scientists want to maintain their funding stream: the government grants they get as a result of climate change being seen as an emergency [2.1]. This account fades into a more comprehensive narrative drawn from broader cultural discourses. Climate scientists are participants in a vast, international conspiracy that is trying to make money, take away liberties, and overturn capitalism by perpetuating a climate hoax [2.2] (a theme also found by Gunster et al. 2018b). As such, they are not credible [5], and what they say should not be attended to, taken seriously, or considered. But without their testimony, there is no evidence supporting a climate emergency [6].

There is a second approach skeptics can take to resolve the apparent walk/talk inconsistency: take scientists as sincere (or at least, refrain from openly questioning their sincerity) and conclude that they are bad people for not being able to live up to their beliefs. This is the core form of the hypocrisy argument and is frequently expressed as a direct insult or accusation using that term. But bad people are not credible [5], so again—no emergency [6].

A slightly different take focuses less on the outrageousness of the inconsistency and more on the flying itself. Flying is an elite activity, especially flying first class or in private jets, to exotic locales, with limousines at the other end (as scientists are imagined to do). Here skeptics are again drawing from broader populist narratives, portraying climate scientists as bad people due to

membership in an out-of-touch or arrogant elite [4.1]. With another slight shift in emphasis this characterization can morph into a concern for the reasoning scientists are using when they call for flying limits for thee, but not for me [4.2]. Here the emphasis is on scientists' self-rationalization or use of double standards. Whether justifying their own bad behavior or just being elitists, scientists are seen to be bad people, not credible [5], and there is no emergency [6].

Although the hypocrisy argument is expressed primarily through fragments of online, overall Figure 1 demonstrates an extensive, complex, conductive argument tracing various paths from scientists' failure to walk the talk to disbelief in their claims of climate emergency. As Gunster et al. commented about related print discourse, this argument is "more nuanced and layered than is often acknowledged" (2018b, p. 2). The coherence of the various paths is shown in the way that they can commingle, even within the short span of 140 characters. For example:

> [If] all these Politicians, Scientists, and Actors truly believed in Climate Change they would never fly in a plane, drive a giant SUV or live in a big home... yet they do all of those things. They are either hypocrites or know it is a hoax [C1].

Here we have both hypocrite [3] and hoax [2.2] claims presented as potential conclusions from the pragmatic inconsistency, with a hint of elitism [4.1] in the emphasis on giant SUV and big home. Or this, repeating a skeptical maxim from an "influencer:"

> "I will believe it's a crisis, when the people telling me it's a crisis, start acting like it's a crisis"… Did you know that enviros fly twice as much as regular punters, in the UK? That Climate researchers enjoy the perks of international conferences? [C3]

The emphasis here is on what can be concluded from scientists' apparent disbelief [1 and 6]. But there is again a gesture towards elitism [4.1] in the distinction between the "punters" and those with "perks." This tweet also includes a typical offer to reconsider the conclusion "if" or "when"—if scientists would "walk to France," "get their acts together," when scientists "start acting like it's a crisis." Thus, although they are primarily addressing each

other, skeptics present themselves as reasonable people, open to evidence from the other side.

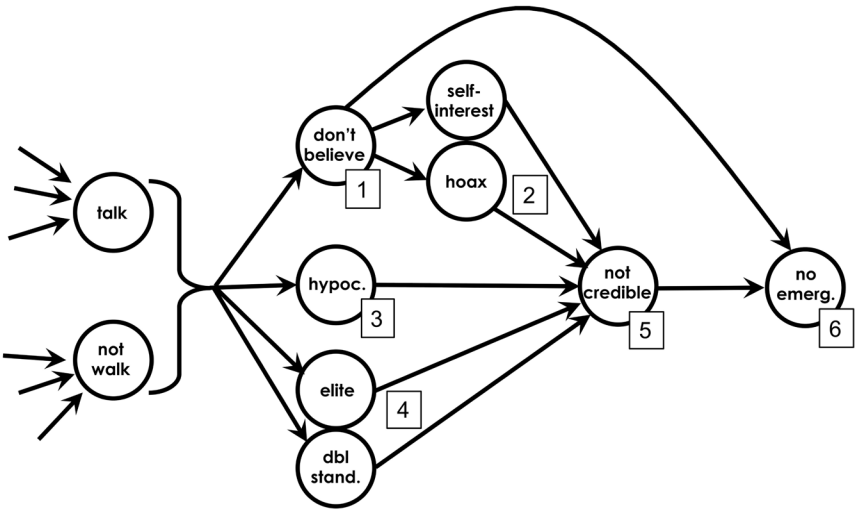


*Figure 1.*

This, then, is the skeptics' hypocrisy argument. I want now to step back and ask what we can learn for argumentation theory from this system-level overview of skeptics' argument-making. There is clearly much going on here that resonates with our longstanding interest in ad hominem fallacies/appeals/arguments. Take Walton's (1998) thorough treatment as representative; his detailed account distinguishes sixteen different argument schemes in the ad hominem family. The problem is that distinctions like those fall apart when we try to apply them to the hypocrisy argument, because so many of them are live possibilities. In particular, the skeptics' hypocrisy argument integrates the three major bases for criticism that Walton's system of schemes wants to separate: (1) CIRCUMSTANTIAL AD HOMINEM (or PRAGMATIC INCONSISTENCY or DOUBLE STANDARDS, due to scientists' walk/talk gap), (2) ETHOTIC AD HOMINEM (attacks on scientists as bad people, due to lack of MORALS, VERACITY, PRUDENCE and/or COGNITIVE SKILLS, depending on which skeptic we listen to), and (3) BIAS AD HOMINEM (due to scientists'

alleged self-interest). The skeptics' hypocrisy argument is all of these at once.

I propose we bite the bullet and recognize the hypocrisy argument represented in Figure 1 for what it is: one argument. I have been referring to it as such over the last pages, and readers themselves can judge whether my usage appeared scandalous. More importantly, participants in the controversy over climate scientists' (and others') flying recognize the hypocrisy argument as just that. When referring to arguments that have been made, arguers sometimes pick them out by their features, as one or more arguments that happen to be about hypocrisy:

> this *skeptic* argument abt hypocrisy [C1]
> An argument about hypocrisy is NOT an argument about either science or policy [C1].
> Sort of like the climate change arguments regarding air travel. [C1]

Such references, however, are rare in the corpora. Instead, arguers talk frequently about "the hypocrisy argument."[1] They speak of it as an argument they have encountered before and from other arguers:

> Just curious if you can get past the hypocrisy argument, it's gotten old [C1].
> see you're resorting to the hypocrite argument again [C1].
> the well-worn straw man "hypocrisy" argument [C1]
> This hypocrisy argument is one I have heard numerous time [C1]
> I'm tired of the "you're a hypocrite" argument [C3].
> The hypocrisy argument is the last refuge of embattled climate change denial [C1].

It is one which they feel prepared to assess and respond to (or not):

> the #hypocrite argument is valid, but overused [C1].
> Not a fan of the "but you take planes" argument regarding hypocritical Climate activists [C1]
> I'm only dealing with this argument once: "you believe in climate change and yet you fly" is very dumb [C1].

[1] While "argument" is the most frequent term, participants also refer to the hypocrisy argument as a "fallacy, appeal, line, line of argument, point, talking point, narrative, card," and "strategy."

> Simple and elegant way to engage with the "hypocrite" argument thrown about by climate crisis deniers [C1].
> I really, really will never understand the hypocrisy argument [C1].

And like a play, it is one which can be performed anew in different circumstances:

> A variation of the "You breathe carbon dioxide so you're a climate hypocrite," argument [C1].
> a good example of the vapid argument that people who support strong action on climate change should not fly [C1]

Unlike most plays the hypocrisy argument has no author; no single skeptic may ever have expressed all the premises laid out Figure 1. Nor does it have a set text. Instead, it seems to have an accordion-like nature (Goodwin 2005, 2007), appearing in everything from a short phrase ("hypocrites, HYPOCRITES, **HYPOCRITES**!), to a full tweet, and beyond to an extended essay.

Made by no single arguer on any single occasion, the complex argument represented in Figure 1 must be considered a system-level phenomenon. In the course of participating in the climate controversy, thousands of skeptics work to document an inconsistency between scientists' walk and talk and to draw conclusions about what that inconsistency means for our decisions about climate action. Numerous other arguers encounter these attempts. From these encounters everyone involved develops a knowledge of what can be argued about climate scientists' flying—what I have elsewhere (Goodwin 2019b) called *argumentative content knowledge*. This is knowledge of the argumentative affordances in this controversy, including the constellations of standpoints (Goodwin 2019a) prevalent there, the issues open, the evidence defensible, and—as here—the commonplace arguments that can be made. Their growing argumentative content knowledge in turn allows arguers to better make or deal appropriately with the hypocrisy argument as they continue to participate in the controversy. The hypocrisy argument thus both emerges from and contributes to innumerable activities of argument-making in the climate controversy.

For argumentation theory, a system-level view suggests among other things that arguments are abstract objects (Simard Smith &

Moldovan 2011; O'Keefe 1982) which cannot be equated with the specific makings, "products" or "speech acts" that instantiate them. In other words: I have quoted above dozens of argument makings (and there are hundreds more in the corpora), but only one argument is getting made: the hypocrisy argument. At the same time, a system-level view suggests that an argument is strongly bound to the controversy in which it emerged. Invention, reconstruction and assessment of arguments like the skeptics' do not occur primarily by applying generalized argumentation or reasoning skills to some specific content. Instead, they are grounded in a more localized knowledge of how to argue about this topic, with these people.[2] Recognition of the situatedness of argumentative knowledge might alter our approach to several traditional areas of argumentation theory. It suggests:

- an empirical turn for a theory of schemes/fallacies, grounded in the argument patterns recognized and deployed by arguers in a controversy
- a similarly empirical turn for a theory of argument fields, which could be based not on external social organization (e.g., disciplines) but on self-constituted networks of arguers arguing with each other, i.e. on controversies
- one method for specifying arguers' obligations on the dialectical tier by reference to the objections which have become *known* within a controversy
- a need to teach "content" integrated with argumentation skills in our undergraduate courses (as perhaps suggested by Ismail, 2020)
- a new tool for argument reconstruction

I will only elaborate on the last of these here, and that, briefly.

[2] Of course, in addition to bounded controversies such as that over zoning for the last few years in my home town, there can be very large ones, like the one that's been going on for several thousands of years over how we should live together. And perhaps a generalized argumentation theory could be built by taking all human arguing as moments in one grand controversy: a "universal controversy" filling somewhat the same slot in theory as Perelman's "universal audience" does.

OSSA 12 saw two papers on argument reconstruction (Lewinski 2020; Stevens 2020), both making good contributions to this longstanding topic of inquiry in argumentation theory. An early step in any argument assessment is finding the argument that was made from the always-inadequate evidence of the discourse making it. Reconstruction is generally seen as the application of some principles of interpretation that set how much charity the analyst should use, e.g., in filling in premises that would make the argument better. As both Stevens and Lewinski recognize, one problem is that there seem to be multiple plausible candidates for the principles of charity; another problem is that none of them fully determine the result—they fail to reliably specify the unique interpretation that reconstruction requires. Lewinski rightly argues that at the level of any particular argumentative interaction, this is a feature, not a bug; what exactly the argument is, is in fact underdetermined and subject to ongoing negotiation between the arguers. It is also the case, however, that the specific interaction is likely part of a larger system of related interactions—a controversy. The argumentative content knowledge arguers gain through participating in the system can equip them with tools to manage challenges in specific interactions. Premises which are unstated and thus "missing" in one interaction may have been already made explicit in many, many others. This means that analysts won't have to *reconstruct* the argument they are seeing here and now; they can simply *recognize* it, having seen it before.

In concluding this section, let me say that I believe this approach opens as many questions as it helps resolve. I call in particular on informal logicians to do a better job than I can in specifying the relationship between the hypocrisy argument and its instantiations (perhaps type/token?). It may also be time to re-open the question of the identity conditions for argument (Simard Smith & Moldovan 2011; Johnson 2008). As we saw above, arguers talk about the hypocrisy argument as if it were differentiable from all the other arguments circulating in the climate controversy. But each of the nodes in Figure 1 can be stated in different ways, and expanded accordion-like in different directions. This one hypocrisy argument, further, is getting made together with lots of others, and nodes like the "climate hoax" [2.2] fade into broader narra-

tives. Our field has spilt a lot of ink arguing about what an argument is; it seems worthwhile to turn now to the question of what is one argument (e.g. the hypocrisy argument) instead of another.

## 3. Climate Scientists Respond

As should be obvious in the quotations above, the hypocrisy argument is recognized and named almost exclusively by those who don't like it. So it's no surprise that they quickly reach for the language of "logical fallacies" in order to articulate what is going wrong. In general, a fallacy attribution gets made as a quick way of dismissing the skeptics' argument, sometimes directly to the skeptic making it:

> [Skeptic] Ban private jet travel and get the IPCC to hold their meetings via Skype and I might take the Chicken Littles seriously. [Response] Some climate scientists and campaigners don't ever fly. But that's hardly the point, stupid to say that you cannot participate in the system while attempting to reform the system. Your logical fallacy is a few of these including ad hominem & straw man https://yourlogicalfallacyis.com [C1]

The fallacy attribution also shows up in discussions of the hypocrisy argument within the pro-climate-action camp.

> BTW this is an excellent rebuttal to the tu quoque logical fallacy anti-climate trolls regularly truck out: [linking to a blog post analyzing the hypocrisy argument deployed during a recent event, C1]

These discussions at several points grow into extended analyses of the type and weakness of the fallacy involved. Several candidates are mentioned, including ad hominem (most frequent), tu quoque, non sequiter, red herring, straw man, whataboutism, and No True Scotsman. Some argue that climate scientists should be judged only on how well they can support their conclusions; personal characteristics are irrelevant. A blog post provides a counterpoint, insisting that a proposer's willingness to live with their own proposal is indeed relevant to assessing whether it is worth considering. Such analyses approach the edges of argumentation theory, sometimes drawing on the plentiful online resources for fallacies

like the websites linked in the above examples. One of those sites happens to be run by an advertising creative, the other by a textile designer/activist, but a few arguers seek more reputable help. A reporter tracks down a philosopher to interview about fallacies, and a blogger references Aikin (2008), particularly appreciating the idea of tu quoque "judo"—using the difficulty of complying with one's own advice as evidence of how much the system needs changing.

Climate scientists and their friends largely agree that fallacy or not, the skeptics' argument does not deserve serious consideration. As one explained, "'people who use the personal choices of climate scientists as some kind of excuse for not understanding science or refusing to accept science, those are not good-faith arguments, and we shouldn't really entertain them'" [C2]. It is widely thought that even if scientists comply with skeptics' demands and "liv[e] carbon neutral…[that would] not assuage their 'concern'" [C3], since "they [would] have million other things to make up…[t]o accuse us of not walking the talk no matter what our net Climate Fitbit report says" [C3]. Anything scientists do will actually be turned into ammunition against them. There are numerous variations on this theme:

> If climate scientists fly the mitigation sceptics will call them hypocrites. If climate scientists do not fly the mitigation sceptics will call them activists. As always, the best advice is to ignore what the unreasonable will say [C3].
>
> Zero of the climate movement's enemies are arguing in good faith, if they ever were. That means anything the leaders do will be spun. If you're not a hypocrite who flies you're a judgmental hair-shirty preachy bore who doesn't. [C3]

So pro-climate-action arguers decline to respond to the skeptics' argument. But this doesn't mean that they avoid confronting the underlying issue: should climate scientists fly? A loose network has emerged, arguing for reduced flying by scientists and academics generally—a standpoint in the controversy I will call "Fly-Less." The corpora documents individual scientists deciding to limit flying at least as early as the mid-2000s, and more collective efforts emerging a decade later, when FlyingLess.org (which sponsors a petition urging universities and scholarly associations

to increase transparency and reduce flying) and NoFlyClimateSci (where individuals can tell their flight-free stories) began maintaining significant social media presences. This network did not arise in response to the skeptics' hypocrisy argument, although its core reasoning runs in parallel: instead of the skeptics' forensic arguments accusing scientists for their failure to walk the talk, the FlyLess camp makes deliberative arguments why they ought to do so.

Addressing their colleagues, FlyLess arguers don't waste much energy backing the existence of a climate emergency. They do, however, develop a diverse set of arguments for why the emergency makes it useful or obligatory for them to take personal action. The most prominent theme emphasizes the importance of credibility—ethos—for climate communicators. "Maintaining credibility of scientific facts, academia and experts has become a key challenge of the sciences in our time" [C2], they reason. Thus "given the political polarization over the issue…the climate message cannot be separated from the messenger" [C2]. While "hypocrisy undermines…credibility" [C2], "integrity…defined as a coherence between a person's statements of belief on the one hand and their personal choices on the other" [C2] builds it. Therefore "if we want to maintain trust and credibility, the science community has to align the way we do research with what we think society has to do to have a sustainable planet" [C2].

> I cannot be credible as a climate scientist if I don't align my own behavior with what I'm saying one has to do. So this is not a personal choice of stopping to fly because I don't feel comfortable about it, but it's a professional choice of reducing my emissions because I want to remain credible and I want to keep the trust of society [C2].

Given their investment in ethos-building, the FlyLess networked welcomed and extensively discussed a pair of experimental studies (Attari, Krantz & Weber 2019, Sparkman & Attari 2020) showing that that hypocrisy does indeed undermine credibility. The research "reinforces what my gut was telling me," one scientist commented.

Some in the FlyLess camp extend their analysis of ethos by pointing out how hypocrisy is particularly damaging given climate

scientists' position of privilege. "The climate scientist needs to tell the coal miner that things cannot go on the way they have. That is such an emotionally laden conversation," one commented. "How can we tell people who have less that they need to change their economic circumstances, when we who have more don't?" [C2]. Climate scientists' "carbon-profligate lifestyles undermine their moral authority" to demand change from those who bear the economic burdens. Continuing to fly in these circumstances is only possible by applying, consciously or unconsciously, a double standard in judging one's own behavior.

> When we get on a plane, what we're saying is: this flight is more important for me and for the climate than the damage that's being caused by it. And there's a— there's a certain arrogance in that; that "We are a special elite that should be allowed to have higher carbon footprints than other people because what we are doing is so important" [C2].

Elsewhere, the same scientist concludes:

> ultimately it is both arrogant and ineffective to point to the need for others to deliver major change if we are not willing to demonstrate how such changes can be viable within our own community. Leading by example may add not to the veracity of our research— but from experience it certainly adds to the credibility [C2]

In a second line of argument, FlyLess proponents expand shift attention from a behavior's impact on perceptions of the messenger to the way that behavior can serve as a message itself. Hoary maxims like "actions speak louder than words" or "put your money where your mouth is" get referenced, together with the more contemporary variant, that "when people take personal responsibility, they begin to have skin in the game" [C2]. The reasoning behind these commonplaces:

> Humans are social animals, and we use social cues to recognize emergencies. People don't spring into action just because they see smoke; they spring into action because they see others rushing in with water. The same principle applies to personal actions on climate change [C2].

Flying by climate scientists "sends a message to the public that a shift away from fossil fuels is not urgent, when the opposite is

true" [C2]. In contrast, giving up flying, and thus giving up its convenience, relative cheapness, and prestige, serves to "communicate the urgency of the Earth system changes we're seeing" [C2].

> Because there's no carbon-free alternative to flying, its symbolic power becomes that much greater. By flying less or refusing to fly as scientists, we're stating that the crisis is bad enough to merit moving away from business-as-usual practices to address it [C2]

I confess it was a pleasure to find climate scientists reasoning this way about their moral authority, since I've made a similar case for the epistemic authority of climate scientists (Goodwin & Dahlstrom 2014) and experts generally (Goodwin 2011). Expressions of opinion about the existence of climate change gain force when scientists commit themselves to them, risking their reputations; this sends a costly signal to audiences, who can reason that scientists would not run such risks unless they were really committed to what they were saying. Although FlyLess arguers do not cite the scholarly literature on this point, pledges to reduce flying do provide audiences with similar costly, and thus trustworthy, signals of scientists' assessments of climate urgency.

In a final line of argument, FlyLess arguers lean on the systems thinking that many of them are trained in. Global warming emerges within coupled human-natural systems: greenhouse gas emissions from human agricultural, transportation, energy and other systems alter the earth's atmosphere, oceans, ecosystems, etc., driving changes that the human systems then have to adapt to. FlyLess arguers seldom assert (and sometimes explicitly deny) that their emission reductions will have any significant impact on natural systems. Instead, they argue that their behavior will affect the state of the human systems. This can be framed in economic terms: every flight booking, for example, sends a "market signal" that says "please buy some more aircraft," and thus "locks in" for the long term infrastructure that will continue to incentivize flying as easier and cheaper than other forms of transportation [C2]. Alternately, the impact may be on social/cultural systems:

> Climate change is not only a very complicated problem, it is also a complex one—I'm using the word complex here in the way that a

> physicist may use it. Complex systems are not open to simple reductionist analyses. In this case unpredictable emergent properties may arise from the myriad of often tacit interactions between seven billion citizens. Most changes will not gain momentum, but occasionally some will—and even when new ideas fail, they may still catalyse further change elsewhere [C2].

Those who the arguers call "role models" or "opinion leaders" or "multipliers" can have the effect of "shifting what we view as normal" and normative [C2], thus making room for larger changes or "tipping points." Thus individual action can provoke the "cultural shift to bring about the rapid, large-scale change that is our only hope for some mitigation of the impacts of [anthropogenic climate disruption]" [C2]. As one FlyLess arguer summarizes:

> And I've realized that the main impact of reducing our emissions isn't the emissions reduction itself: by modeling change, we tell a new story of what's possible, shifting the culture and opening space for large-scale change. [C2].

These then are the reasons why FlyLess arguers think that walking the talk is vital: to maintain their credibility as climate advocates, especially in the face of power differentials; to send a costly signal of the urgency of climate policy; and to be a catalyst for changes in economic and cultural systems. They fill out their case in several additional directions. I will briefly review them not because they are significant to the argument I want to make, but because I believe they deserve consideration from the likely academic readers of this essay.

Why the focus on flying, as opposed to other carbon-emitting behaviors? For skeptics flying was a visible, carbon-intensive, optional, and elite activity, all of which made it argumentatively convenient. The FlyLess scientists need to make a slightly different case (Wilde 2019 provides a convenient summary). Although it contributes only a relatively small portion of the worlds greenhouse gas emissions (2% is the figure usually mentioned), those emissions, it is argued, are growing, may be especially damaging to the atmosphere, cannot be reduced by substituting a different fuel, and are difficult to regulate due to international agreements. More importantly, flying represents a surprisingly large portion of

the carbon footprints of individual academics and academic institutions. And (as the skeptics pointed out) flying is a privilege not fairly distributed: a small portion of the world's population, and of the academic world, is responsible for a large portion of the emissions. As matter of justice, in an era of constrained carbon budgets flying ought to be one of the first things to go.

Facing protests from their colleagues that they *need* to fly to do their jobs, FlyLess arguers have proceeded by incorporating these objections into their case, developing a nuanced dialectical tier specifying what needs to be considered in deciding whether to fly (Le Quéré et al. 2015 is worth consulting). Only one prominent arguer in the corpora imprudently made a "no fly" pledge (and had to take it back when he took a job on another continent). Instead, FlyLess arguers urge academics to carefully review each flight in order to test whether it is indeed justified. They encourage reflecting on who needs to fly (e.g., junior scholars building their careers), for what (multiple events packaged together are more worth the carbon cost than a twenty minute talk), and under what circumstances (not if other transportation is available). They also urge conference organizers to experiment with remote options and universities to track (and publicize) emissions from academic travel and to support faculty who fly less (for example, by de-emphasizing external presentations in the tenure process). Indeed, they argue, climate scientists will best be able to defend their individual ethos when they can point to the ways that their institutions are leading the way in creating a post-carbon world.

Finally, FlyLess advocates emphasize the additional benefits of their path (see Kalmus 2017, for an eloquent statement). A slow lifestyle is more fulfilling, they argue, and distance conferences will be more diverse because more accessible to those who can't fly for reasons of physical disability, family responsibilities, or financial limitations.

Although the FlyLess advocates develop their case with no explicit reference to the skeptics' hypocrisy argument, it seems clear that they are exploiting the same disagreement space. The climate scientists are concerned that flying can signal their lack of confidence in the urgency of climate change—cluster 1 in the Figure 1 diagram of the skeptics' argument. They recognize that

they undermine their ethos when they look like hypocrites—cluster 3—and moreover start to appear to be a privileged elite willing to impose on others burdens they will not undertake themselves—cluster 4. Only the spurious, conspiracy-oriented cluster 2 is missing. The convergence of some of the skeptics' harsh critiques with the thoughtful reflections of members of their own community suggests that at a minimum, climate scientists should give this issue serious consideration.

I want to step back again and ask what we can learn from the responses climate scientists made to the skeptics' hypocrisy argument and more generally to the issue of whether they should fly. Skeptics developed their argument largely through drive-by tweets (Corpus 1). The FlyLess discourse by contrast appears primarily in longform: in blog posts, interviews, editorials (Corpus 2). Prodded by their opponents, supported by their allies, with some time for reflection and venues for going public, FlyLess arguers have been taking their implicit, practical, argumentative content knowledge and making it explicit. By recognizing the hypocrisy argument and giving it a name, they have made it an object of thought. This not only enhances their ability to deal with the argument but draws them into considering whether it might be a fallacy, which one, and what such a fallacy ascription might mean. The need to uphold their own standing as participants in the controversy has similarly nudged FlyLess arguers to reflect on the conditions in which their argument-making can have force. Will flying less strengthen the arguments and amplify the voices of climate scientists? Why?—what are the mechanisms driving these effects? In most of these reflections, arguers have at least paralleled academic discussions of the same topics, and at several points have drawn directly from them. In sum, considered at the system level, FlyLess arguers have produced a substantial body of meta-argumentation—of arguments about arguments; they have produced some argumentation theory.

Following Craig (1996), it thus seems best to conceive argumentation theory not as a distinct realm of endeavor but as lying on a spectrum with argumentative practice. Participants in this and other controversies talk about their activities, either as an additional way to defend them to their opponents or as part of back-stage strategizing with their allies. As Jackson has recently argued, it

may be that all the concepts, theories, methods, models, techniques, rules that we tend to assign to argumentation theory—all our "built-up forms of argumentation" (Jackson 2015), all "humanity's store of resources for reasoning" (Jackson & Schneider 2018)—have emerged at one point or another from the "natural normativity" (Jackson 2019) of argumentative practice, as practitioners attempt to refine and augment what they are doing. Originating in specific argumentative interactions and sharpened as similar interactions get repeated, sometimes these resources (to use the most encompassing term) spread through the network of arguers and are absorbed into the argumentative content knowledge underlying fluent practice in a controversy. One of our jobs as argumentation theorists is to further articulate these resources, making them even more explicit; to put them in order, linking them into coherent structures; to ground them within more comprehensive views developed in our disciplines; and when appropriate, to critique them (Goodwin 2002, 2014, 2020).

Doing that job in this case might lead us to notice that one of the FlyLess meta-arguments does not receive a strong echo from within argumentation theory. While we do have discussions of fallacies, of ethos, and of costly signaling, we are making little use of the systems thinking that climate scientists found comfortable. What would it look like if we took a systems approach to argumentation seriously and started articulating, ordering, grounding and critiquing it? The system in question consists of arguers making arguments to each other. We might be curious to find out how "resources for reasoning" in the broadest sense get created, circulated (or spread through contagion), or tamped down; or as Schneider and Jackson put it, "the process by which arguers maintain a repertoire of forms over time through additions, transformations, and even removals" (Schneider & Jackson 2018). Until recently, the data and computational power to accomplish such tasks was unavailable. No longer. So it is disappointing to confront the poor showing that some of argumentation theory's traditional "resources for reasoning" make when implemented for analysis of large corpora. As reviewed in Visser et al. (2020), human annotators have found it difficult to reliably apply a standard set of argument schemes to corpora of typically argumentative discourse.

The current theory of schemes seems to lie uneasily in the middle of the theory/practice spectrum, far from both the rich but largely implicit argumentative content knowledge of ordinary arguers and the fully explicitized, although perhaps unintuitive, conceptions of argumentation theory. There would seem to be two ways forward. One, exemplified, by the work Wagemans presented at OSSA 12 (2020), pushes farther towards the theory end of the spectrum and develops more "formalized argumentation theoretical insights" as the basis of automated detection of schemes (or other argumentative resources). The work presented here suggests another approach (paralleling Paglieri's 2016 proposal for "ecological" assistive technologies): move farther towards the practice end and deploy the metadiscursive vocabulary of ordinary arguers. If humans can learn to recognize the hypocrisy argument in the ebb and flow of Twitter, we should be able to train a machine to do likewise. One way or the other: to continue to explore system-level aspects of argumentation, we need macroscopes (Musi & Aakhus 2018) now!

In addition to our task of finding and theorizing naturally occurring "resources for reasoning," another job we have as argumentation theorists is to feed back whatever we've figured out to the system that produced them, whether through teaching (e.g., Jenicek, Croskerry & Hitchcock 2011), consulting, commenting (as Christian Kock has done), or direct intervention in the controversy. In the case at hand, if climate scientists are willing to seek help from an ad man whose main claim to expertise is that he's had practice committing fallacies, they should also be willing to listen to us. If we can persuade them, that is, to suppress the methodological snobbery that might rate experimental studies more highly than formal analyses or some pages from Aristotle.

## 4. Polylogical interactions

The skeptical and the FlyLess reasoning about climate scientists' flying run along parallel tracks. FlyLess arguers therefore need to differentiate themselves from those that they and their intended audiences—fellow climate scientists and academics generally—consider as enemies. The emergence of hypocrisy accusations

within the pro-climate-action camp itself has only made differentiation more urgent. New activists, discontented with the slow pace of change, have indicted environmental leaders for dawdling and pretense, demanding aggressive action to achieve a net zero economy now. Greta Thunberg and the climate strike are perhaps most prominent in this group, which also includes the Flight Free and flygskam ("flying shame") movements. As the reference to shame indicates, those in this camp make frequent use of hypocrisy charges; indeed, Gunster et al.'s (2018a) review of traditional media found more charges of hypocrisy from pro-climate-action arguers than from skeptics. Particularly since Thunberg's much-publicized sea voyage to North America, climate scientists' flying has come under attack, often in harsh terms. These are typical in their articulation of the themes of hypocrisy, self-interest and elitism ([2.1], [3] and [4.1] in Figure 1) from pro-climate-action arguers:

> There are still "climate scientists" who fly to "climate conferences" seeking career-review/peer-review. What's that? Oh sorry – Nearly all "climate scientists" propose that career (status) outweighs the destruction of all careers & all states. Dear "climate scientist", why not write down your thoughts on paper & then distribute them by post?...Otherwise, for you, I send this ancient curse – a plague on all your houses [C3].
>
> This week in 'top scientists too arrogant NOT to fly', this clown jets to…and takes his family, to boot. @flightfree2020 #flygskam [C1].

Such attacks hurt. The corpora includes multiple stories from climate scientist recounting hypocrisy accusations from friends or "vitriolic online attacks…from environmentalists" [C2]. The tension around the topic is also evident from the way climate scientists on Twitter are quick to block or threaten to block pro-climate-action folk who question their flying. Presumably skeptics are being blocked as well, but that doesn't get discussed; blocks within the like-minded community lead to expressions of surprise, anger and pain on both sides.

In the environment created by such accusations, most FlyLess climate scientists work hard to mitigate their tone, making arguments about climate scientists' need to align beliefs and behaviors

([1] in Figure 1), while avoiding any suggestion that climate scientists are bad people ([2], [3] and [4]). Many of their arguments are accompanied by specific disclaimers along the lines of "I also don't try to shame anyone in the above" [C3] or "personal choices are not shaming statements or critiques for someone that still chooses to fly" [C2]. They also tend to call not for immediate behavior change, but only for thoughtful consideration, as for example closing a series of arguments with an undemanding "keep our initiative in the back of your mind?" [C3]. Another consistent FlyLess strategy is to articulate reasons while adopting a strictly personal perspective, with no hint of blaming others. The most-circulated FlyLess essay is a model for this approach:

> I was awash in cognitive dissonance. My awareness of global warming had risen to a fever pitch, but I hadn't yet made real changes to my daily life. This disconnect made me feel panicked and disempowered… Then one evening…I gathered my utility bills and did some internet research…. I'd assumed that electricity and driving were my largest sources of emissions. Instead, it turned out that the 50,000 miles I'd flown that year (two international and half a dozen domestic flights, typical for postdocs in the sciences who are expected to attend conferences and meetings) utterly dominated my emissions…. The quantitative estimates of my emissions guided me as I set about resolving the dissonance between my principles and my actions. I began to change my daily life. I began to change myself…. I experienced a lot of social pressure to fly, so it took me three years to quit… With the world population approaching 8 billion, my reduction obviously can't solve global warming. But by changing ourselves in more than merely incremental ways, I believe we contribute to opening social and political space for large-scale change. We tell a new story by changing how we live [C2].

The writer builds his arguments around the framework of a personal narrative. It begins with an inward experience of "dissonance." The main points of the FlyLess case come in as personal discoveries and personal reasoning leading to a personal choice. Only at the end is the reader invited to join the writer among the "we" who will communicate through changed behavior. "I tried to be pretty careful to tell it from my own personal perspective," this

scientist later commented. "I recognize how challenging it is. Everyone is going to have their own path" [C2].

The "dissonance" this writer felt is a feeling commonly expressed among FlyLess arguers, who speak of themselves as being "shocked," "stunned—even horrified," or filled with "anxiety" at their failure to align beliefs and actions. Even hypocrisy gets mentioned, but as an accusation the self levels against the self, as when one academic speaks of "feeling all the guilt and hypocrisy wash over me every time I board a plane to go somewhere to talk about climate change [C3]. These feelings seem to have resonated with the wider audience, bringing out equally personal confessions in response. The long essay above gets retweeted with comments like:

> I struggle with this
> worthwhile but hard to contemplate
> something to think about
> thinking about the problem with how much I fly
> I want to live like this [C1].

Their disclaimers and personalized rhetorical posture have not, however, saved the FlyLess arguers from critique. Other climate scientists have objected to the FlyLess case, staking out the position that their arguments should not be made at all. The objectors draw arguments from another longstanding debate within the pro-climate-action community, one over the appropriateness of *Inconvenient Truth*-style recommendations for individual action. The sophisticated argument assessment being developed within that debate is (unfortunately) beyond the scope of this essay, but to summarize briefly: In one line of thinking, not only will individual actions fail to stop climate change, even talking about individual action makes the audience feel guilty and hopeless. But guilt and despair undermine conditions for collective action. Climate advocates thus need to focus instead on achieving large-scale transformation through overhaul of governmental policies. Within the controversy over whether climate scientists should fly, several arguers have been drawing from this body of argument to reject any discussion of scientists' flying, whether from skeptics, environmental radicals, or FlyLess arguers. When asked "should cli-

mate scientists fly?" these climate scientists and climate-concerned academics respond: "fundamentally that is the wrong question" [C2]. Although they are not (yet) an organized group, their arguments are similar; I will call them SC, proponents of structural (or system) change, and examine two of their leading themes.

A first theme of the SC arguers is that making and replying to arguments about climate scientists' flying wastes time and takes attention away from more important considerations. "Though air travel accounts for only a paltry 2% of global emissions, whether or not climate scientists should fly consumes far more than 2% of my Twitter timeline" [C2], one scientist complains. "Climate scientists could stop flying tomorrow," another comments, "and it would have exactly zero effect on the policy debate. The argument over flying is a distraction" [C1]. Even though "refusing to fly does send an important message, it's important to make sure a narrow focus on flight emissions doesn't cause us to lose sight of the need for impactful climate action in multiple sectors" [C2]. It is those other sectors, not climate scientists, that need attention:

> Why would we ever consider climate scientists an appropriate target for our outrage and action, when multinational corporations and gutless political leaders are making out like racketeers from heating the planet?... These are the exact targets for where our public outrage and grief should land [C3]

SC arguers are here urging a sort of economics of argument: a calculation whether the cost of the argument in time and attention is worth the payout in emission reductions, especially factoring in the opportunity costs of attention turned away from more important issues. In short, when "there is a tanker load of petrol pumping fuel onto our burning house… accusing those trying to stop the tanker pumps of wearing flamable clothes is not helping" [C3].

But arguing about climate scientists' flying is not only "not helping;" one leading scientist repeatedly terms it "offensive" [C2]. Where does this outrage against an argument come from? Developing a second theme, SC arguers emphasize that in distracting attention away from the real enemies ("multinational corporations and gutless political leaders"), those who question scientists'

flying are giving themselves over to those enemies. They are, first of all, doing just what those enemies want:

> It's a hill away from the main battle lines and they want us there rather than facing economic climate solutions head on which will take resolve and compromise from both sides of the political spectrum. Climate deniers would rather have us as far away from that as possible [C3].
> This argument that we fly too much? It's a distraction that the fossil fuel industry loves, because it keeps us from focusing on the real problem [C3].

In addition to distracting attention from the real issue, the flying-scientist debate, filled with mutual "finger-pointing, grandstanding, condemning and shaming" serves also to "further erode[] and discredit[] the public trust in the good-faith actions of climate and earth scientists"—another enemy objective. So it is no surprise that the enemies are actively promoting the debate. In the latest entry in a "long history of industry-funded 'deflection campaigns' aimed to divert attention from big polluters and place the burden on individuals" [C2], the "fossil fuel PR machine" wants "to…convince us that we (not industry) are the cause of the problem" [C3]. Although arguers concerned about flying might think of themselves as unswayed by such propaganda, they still would be making themselves co-optable. For it would be no surprise that the enemy "might seek to amplify arguments/viewpoints/suggestions that project onto this framing #JustSayin." The focus on scientists' alleged hypocrisy is thus an effective strategy "for fossil fuel PR flacks & those who (sometimes unwittingly) help advance their agenda" [C3]. "Intentionally or inadvertently," those who talk about climate scientists' flying "distract from the kind of difficult but necessary change required to actually shift the entire energy infrastructure." In sum:

> There is an attempt being made by [the fossil fuel industry] to deflect attention away from finding policy solutions to global warming towards promoting individual behaviour changes that affect people's diets, travel choices and other personal behaviour. This is a deflection campaign and a lot of well-meaning people have been taken in by it. We should also be aware how the forces of denial are exploiting the lifestyle change movement to get their support-

> ers to argue with each other. It takes pressure off attempts to regulate the fossil fuel industry. This approach is a softer form of denial and in many ways it is more pernicious [C2].

In the first section of this essay, we saw the skeptics invoking various conspiracy theories to explain the gap between climate scientists' practice and their preaching and adopting forensic language to denounce those conspiracies. Here we see SC arguers making a similar explanatory and forensic move, only at the meta-level. Why might anyone be questioning climate scientists' flying? They are "sometimes unwittingly," "intentionally or inadvertently" the partners of the climate enemies: "soft denialists," or pawns thereof, "#Just Sayin."

The SC themes of both distraction and co-optation are primarily targeted at Greta Thunberg-style accusations of hypocrisy and complacency. The FlyLess arguers, with their manifest restraint from blame and emphasis the effectiveness of messaging, not emissions reduction, would not seem to deserve such criticisms. But the corpora show that the SC camp does in fact lump the FlyLess position in with the environmental radicals and skeptics. In response to a call to become a "climate role model," one SC climate scientist replies: "by parroting their [industry propagandists'] specious claims you are facilitating their attacks" [C2]. Or consider this exchange among several of the leading arguers on both sides. An SC climate scientist posts this claim:

> [SC 1] We should all be accountable for our choices - but it is a red herring to say that "Until scientists practice what they preach we'll never make climate progress." No - this is an obfuscation tactic [C3].

Here are several FlyLess arguers' attempts to reply, with responses:

> [FlyLess 1] That's true. But it's also true that scientists (all climate messengers) practicing what they preach adds credibility to the message. It's not really an either/or. And with pleasure travel at 8% annual emissions, every flight matters.
> [SC 1] We are constantly scrutinized for our alignment with messaging. And yet fossil fuel and narcissistic interest make billions

> of dollars heating the planet. How do you square that? As a poverty-level academic, it doesn't fucking fit.
> …
> [FlyLess 2] I'm not sure anyone's saying scientists flying is "the problem."
> I'm certainly not. For those alarmed about climate change though, scientist or otherwise, flying less is a great way to be happier (aligning action with principle) and to push for cultural shift.
> [SC 1] It's a rhetorical position I frequently see, and it's designed to reduce credibility. Essentially, it's a political tactic to redirect blame.
> …
> [FlyLess 3] Don't you think that those who purport to have a deeper understanding of an existential problem that requires action by all might be reasonably expected to take some of that action themselves, if they expect to be taken seriously?
> [SC 2] No. And continually attempting to place the blame for climate change on individual decisions rather than the structure of our politics and economy only reinforces the status quo [C3].

In each of these exchanges, a FlyLess arguer presses their basic points: climate scientists should consider flying less in order to build credibility, create cultural change, and signal their beliefs. Each of these arguments is summarily rejected as following "fossil fuel and narcissistic interest[s]" in redirecting "blame" from those enemies to climate scientists, with the outcome of "reduc[ing climate scientists'] credibility" and ultimately "reinforce[ing] the status quo." The SC arguers speak in general terms, referring to being "constantly scrutinized" or "continually…blame[d]" by this "rhetorical position…political tactic." But the implication is clear: as with the sly (or smarmy) "#Just Sayin," those who make FlyLess arguments are by that aligning themselves with the enemy.

As we have seen, the SC arguers have a point: the FlyLess reasoning does indeed run in parallel with the skeptics' hypocrisy argument and its radical-environmental variant. Still, I am sympathetic with the FlyLess arguer who pointed out that "saying 'Well I think that's what the fossil fuel industry would want you to say'" is "such a terrible, reachy argument" [3]. It is false, and moreover poor rhetorical strategy, for climate scientists to accuse each other of "denialism," however "soft." That stance cedes far too much of

the disagreement space to the opponents, putting pro-climate-action arguers into the purely reactive posture of "whatever the fossil fuel industry says, I say the opposite." By this, SC arguers are painting themselves into a tight corner. Both SC and FlyLess proponents repeatedly and I believe sincerely avow that system change and individual action should both be pursued. Indeed, practically all the major participants in this controversy appear to have made significant cuts in their individual emissions. But while FlyLess arguers can be transparent, and even proud, about their conservation efforts, SC arguers seem actually embarrassed by them. After describing the work they're putting in to save energy, two find it necessary to go on to add "but all that is irrelevant" and "mostly feel-good bullshit" [C2]. They limit their emissions—they only can't *make an argument* for it, since that would, according to their argument, demonstrate that they had been co-opted.

The SC arguers take the making of argument about flying as grounds for characterizing the makers as "soft denialists," whether those makers are skeptics, discontented environmentalists, or FlyLess colleagues. This move—making argumentative use of another's argument-making—occurs frequently in the controversy. The SC arguers themselves come in for the same treatment. Several skeptics circulate a link to a leading SC essays, adding only their conclusions:

> Yeah, I think the climateers will exempt themselves from such restrictions.
> Carbon footprints are for little people [C1].

The premises, conclusions, reasoning of the SC argument are not engaged. Instead, the skeptic takes the fact that climate scientists are trying to argue their way out of individual action as further confirmation of their tendency to exempt themselves from their own rules. Flight-shaming environmentalists share this view of the SC argument, as in this response to an SC twitter post:

> [Leading SC arguer] *must* fly…to do his work…– oh & personal footprints don't matter, btw! If a scientist this prominent can manufacture gratuitous excuses for his own luxuries don't expect much from others [C3].

Indeed, several environmentalists see the SC argument-making as just another "DELAY," and draw the conclusion:

> YOU are in denial & such denialism is the worst in a way [C3].
> it's just another type of climate change denialism" [C3].[3]

To close the circle, we can look at how the FlyLess arguers use the skeptics argument-making against them. As we saw above, skeptics often express their hypocrisy argument as a willingness to believe scientists "if/when" they start walking the talk. In response to one such pious wish ("just once I'd love to see a #climatechange prophet voluntarily live what they want government to impose on the rest of us"), a leading FlyLess arguer responds by granting it:

> If your tweet is serious, you will appreciate the interviews with scientists and other folks at "no fly climate sci" [website]. But if you are just badgering without really wanting to see this, you can ignore the link [C3].

Pro-climate-action arguers believe that skeptics argue in bad faith. But bad faith can be hard to document since it will always be denied. And even seriously flawed arguments may simply be bad, not in bad faith. To meet these challenges, FlyLess arguers can leverage the skeptics' hypocrisy argument against them. The FlyLess arguer here issues a mildly phrased invitation for the skeptic to show his true intent. If he is "serious," he will be glad to learn about climate scientists who are practicing what they preach. Or he can decline the invitation—and demonstrate that he's "just badgering."

We see here somewhat of a circular firing squad: The FlyLess arguments show they are "soft denialists;" so the SC arguers say. Those very SC arguments show they are yet again rationalizing privileges they would deny to others, the skeptics allege, reinforcing their hypocrisy argument. The skeptics' hypocrisy argument makes evident their bad faith—when the FlyLess arguers call it

[3] Although FlyLess arguers do not in the corpora accuse anyone of being "denialists," they do argue that by making their arguments, SC arguers are appearing to engage in ethos-undermining rationalization: "The 'we need systemic change' argument is weakened considerably insofar as it seems like self-justification for continuing to enjoy high-carbon pleasures" [C3].

out. In each case, the fact that the opponent is making an argument provides part of the grounds for why they should not have standing within the controversy.

In this essay I have expanded attention from arguers with a single standpoint, the skeptics, to the responses of their FlyLess opponents, and now to a polylogue involving both of these, SC arguers, and radical environmentalists. In addition to their constant efforts to make arguments for their standpoints, all these arguers are also expending significant energy in regulating the controversy itself by making arguments—meta-arguments—about who does and does not deserve a hearing. That is the center of the skeptics' original argument: that climate scientists aren't worth listening to because of their failure to walk the talk. The skeptics build their case for what Aristotle would term inartistic ethos, the character constructed for scientists out of evidence external to the controversy itself. As the controversy evolves, the argument-makings from each standpoint accumulate, and themselves become affordances for further arguments, now focused on artistic ethos—the character that emerges from the activity of arguing itself. The arguments made identify the arguers as being co-opted by the enemy, hypocrites, or in bad faith.

To take a final step back, let us ask what we can learn from these polylogical interactions. There is a widely shared intuition that arguments[4] take place on a contested terrain where standpoints are taken, common ground identified, support built up, and opposing positions attacked or maneuvered around. These and related spatial metaphors are embedded in ordinary metadiscourse about arguments and arguing (Goodwin & Cortes 2010; Goodwin, 2002); they also turn up in argumentation theorists' talk of argument space (Johnson 2000) and disagreement space (Jackson 1992, 2015), as well as in Jacobs' (2020) discussion at OSSA 12 of the need to extend arguments to their greatest achievable range. As Jackson has explained, any move in an argumentative interaction opens new potential disagreement space, since "any recon-

[4] To be clear: argument here refers to the abstract object, i.e. argument-1 in O'Keefe 1982's terminology, or as Johnson 2000 says, an argument "as a particular location in argumentative space."

structible commitment associated with the performance" (1992, p. 261) of that move can be called out by the interlocutor: not only the truth and relevance of propositions asserted, but the appropriateness of the move or the right of the arguer to make it. In a controversy, regions of this potential disagreement space become *actualized*. If the controversy goes on long enough, at one point or another most commitments will have been called out, and the ones that seem productive to some arguer, called out again and again. It is over such well-cultivated ground that arguers can reliably pursue argumentative strategies.

Paglieri and Castelfranchi (2010) called a decade ago for increased attention to the strategic thinking arguers exercise in deciding whether, what and how to argue. Jackson (2008) has similarly called for attention to strategic management of the disagreement space, with emphasis on arguer's need to adapt to the moves that other arguers might make. In a completely novel interaction (if there is such a thing), arguers may face significant challenges figuring out where the exchange of arguments will end up even a few moves in. By contrast, at the system level, where the disagreement space has been at least partially actualized and the terrain is thus known to participants, the difficulties of planning are significantly reduced. The arguers can thus begin forming strategies of greater scope, reliability, and power. This section has documented several quite varied examples. When *An Inconvenient Truth* ramped up the climate controversy, arguing for individual actions like changing light bulbs reasonably seemed to be a way to invite everyone in: you too could strike a blow against climate change! Now that the consequences of that choice of emphasis have become apparent, there is room for the pro-climate-action community to do a much better cost/benefit analysis about whether to continue to claim the *individual choice* terrain or to shift its limited resources of time and attention exclusively to *system change*. The conspicuous occupation of some regions by some arguers also creates opportunities for maneuvering. In the examples above, such maneuvering is being used to regulate the controversy itself, identifying whose voices deserve and do not deserve to be heard. Thus SC arguers try to exclude the FlyLess arguers by showing them guilty by association based on the similarity of the

arguments they have made to those of the fossil fuel enemy. The FlyLess arguers themselves try to avoid looking like skeptics by distancing themselves from the arguments those enemies have made. Finally, we saw how knowledge of the terrain empowers arguers to lie in wait for each other along the well-worn paths they can be expected to travel. Skeptics troll Twitter for yet more arrogant, self-excusing arguments from climate scientists, and the FlyLess arguers are prepared to ambush skeptics when they make one of their shallow gestures at good faith. Like gambits in chess, these traps take advantage of or even create opportunities for making arguments on a board shaped by the moves of other players.

Argumentation theorists are of course ordinary arguers as well. As natives to many of the controversies of our day, we have a strong sense of the lay of the land, who has claimed what, and where the battle lines are currently drawn. My call here is not for us to bracket this knowledge and examine arguments and argumentative interactions as if they were always first of their kinds. Instead, I believe we need to be more explicit about the sources of our confidence when we say that some argumentative move was a clever one, likely to be persuasive, or exploiting topical or framing or presentational potentials. We know these things because we participate in systems of argument making. How do those systems work?

## 5. Conclusion

It has been the assumption of this paper that argumentation theorists can examine argumentative phenomena at different scales (see also Goodwin 2005). At the micro-scale, arguments can be decomposed into premises and conclusions, or into claims, data, and warrants, or into core inferences and answers to accompanying critical questions (and so on).[5] At the meso-scale, argumentative interactions (or dialogues, or conversations) involve two or perhaps a few arguers making and giving arguments to each other on specific occasions. At the macro-scale, controversies consist of

[5] This is speaking from the perspective of the communication discipline; other disciplines might pursue even smaller, nano-scale analysis.

large numbers of arguers making arguments among each other over extended periods of time. So, what is different about controversies? What is happening at the system level that hasn't be captured already by theories of argument and theories of argumentative interactions?

This question is especially pressing because of the paradoxical nature of argument in controversies. On the one hand, controversies are dull. The arguments and interactions that make up a controversy are repetitious and often of low quality. Weakly supported arguments are passionately exchanged by arguers many of whom neither understand nor respect each other—over and over again. Groarke at OSSA 12 (2020) gave a vivid description of this in academic contexts; or we can think of Twitter. On the other hand, we count on controversies to form reasoned public opinion and produce public justifications on the most pressing issues of our communities, like decisions on workplace harassment, or on climate change. How can something so dull be so consequential?

Participating in a controversy, arguers start to recognize how to argue in this controversy: they start to see who else is participating, what is in issue, what standpoints can be taken, who has the burden of proof, what evidence is available (and what are its limitations, Jackson 2020), what arguments can be made, what objections those arguments deserve and—insert here whatever other argumentative resources, affordances or designs your theory says are important. No single transaction can lead them to such recognition. Instead, it is only at scale, in a controversy, that arguers gain argumentative content knowledge. In this case study, I have given one example of such learning by documenting the skeptics' hypocrisy argument as known in the climate controversy. Argumentative content knowledge is drawn on as arguers participate in the controversy and it informs their activities there. Thus in a feedback loop typical of system-level phenomena, controversy both constitutes and is constituted by argumentative content knowledge.

Participating in a controversy, arguers are pressed to make more fully explicit their ordinarily implicit argumentative content knowledge. In the course of argumentative interactions, arguers explain what they are doing as a way of bolstering it, or explain what opponents are doing as a way of undermining it. Behind the

scenes arguers develop similar explanations, as part of planning what to do next. In this case study, I have documented the presence of such meta-arguments focused both on the legitimacy of the skeptics' hypocrisy argument and about the grounds on which climate scientists can claim public attention and trust. Again, no single interaction may produce much insight on these matters. But over time, arguers in the controversy articulate a significant body of what must be called argumentation theory. I have encouraged us here to recognize that 'professional' argumentation theory is continuous with arguers' 'lay' theorizing: slightly more explicit, somewhat better ordered, increasingly grounded in broader perspectives, sometimes mildly critical. Perhaps useful, but not different in kind.

Participating in a controversy, arguers actualize the potentials for disagreement, building up common knowledge of the space they are maneuvering in. This knowledge allows arguers to develop argumentative strategies—long-term, long-range plans for focusing their efforts on the most productive regions and for creating and exploiting opportunities to maneuver around other arguers. In this case study, I cataloged just a few of the likely numerous strategies for seizing the best ground, for managing who has the right to be heard, and for ambushing opponents. These strategies begin to provide an account of the dynamics of argument at the system level: the forces driving change in who is participating in the controversy and what they are doing there.

As I noted at the beginning, controversy has been a longstanding interest in the communication discipline. The account of controversy I have given here has also exhibited my discipline's other characteristic preoccupations: with disagreement, with the persons and communities making arguments, with normativity (to some extent), and with the inventiveness of the arguers who are generating the system that creates the context for their activities. In other disciplines, the increasing availability of data and tools have led to automated analysis of networks of opposing arguers (Garimella et al. 2018) and human reconstructions of the disagreement space (e.g., Venturini 2012). Argumentation theory, I believe, can make uniquely important contributions to this growing body of work by supporting a focus on *argument* at the system level. We would

need to be able to identify the "resources for reasoning" (Jackson & Schneider 2018) available in a controversy, explicitizing the argumentative content knowledge of skilled participants. We would need to be able to detect those resources in massive sets of discourse data and track how they emerge, circulate and decline within the system. We would need to account for the strategic thinking arguers are using that drives such changes. And likely, we would need to do much more: this essay has been no more than a preliminary survey of what serious inquiry into argument at the system level might accomplish. Let's get to work!

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## Appendix 1: Data and Methods

### Corpus 1: Tweets

Corpus 1 consists primarily of Twitter original posts from January 2010-April 2020 containing the keywords "climate" and "fly", plus retweets and replies. It was collected through Crimson Hexagon, a social media analytics platform giving access to the historical Twitter firehose. The full corpus included approximately 341K entries. The following subcorpora were created:

- SCIENTISTS: original posts and replies from Corpus 1 including keyword "scient*"; 4.5K tweets, 654 of which were relevant to the project. These were coded for standpoint: HYPOCRISY claim, RESPONSE to hypocrisy claim, discussion of FLYLESS. Tweets expressing the HYPOCRISY theme were checked against their original conversations to determine whether they were from climate skeptics, climate believers, or undetermined, and whether they were by scientists, nonscientists, or undetermined.
- HYPOCRISY: original posts and replies from Corpus 1 including keyword "hypocr*"; 4.6K tweets. These were scanned for relevance to climate scientists flying.
- METADISCOURSE 1: original posts and replies from Corpus 1 including keywords related to argumentation, including terms that were found in Corpora 2 and 3: "argu*, fallac*, logic*, illogic*, ad hominem, ad hom, [no true] Scotsman, [non] sequiter, poisoning [the well], red herring, special pleading, straw man, [tu] quoque, whatabout*"; 544 tweets.

After exploration, Corpus 1 was supplemented with an additional search:

- METADISOURSE 2: Original posts and replies from January 2010-April 2020 including the keyword "climate" and hypocrisy terminology ("hypocrisy, hypocrite, hypocritical") within 5 words of argumentation terminology ("argument, line, point, narrative, fallacy, idea"); 108 tweets. These were scanned for relevance.

**Corpus 2: Longform**

Corpus 2 consists of journalism, blog posts and comments, podcasts, and any other material available on the internet. This corpus was collected through:

(a) The top 100 URLs referenced in each year in Corpus 1 from 2017 (when the data became available) to 2020, plus the top 100 URLs reference in the SCIENTISTS subcorpus. These were scanned for relevance.
(b) Climate skeptics were underrepresented in (a), so Google search for scientists' hypocrisy or flying was performed on skeptical blogs Climate Audit, Watts Up With That, and Climate Depot.
(c) Convenience sample: material I had been collecting over several years of interest in this topic.
(d) Snowball sample: Other longform mentioned in material in Corpora 1, 2 or 3.

There are 112 documents in this corpus. The documents were imported into Atlas.ti for analysis. The corpus was first holistically coded (Saldaña 2016) for standpoint in debate. Provisional coding was then applied to the non-skeptics' discourse identify main lines of argument I expected, based on several years acquaintance with the controversy over climate scientists' flying and the existing literature. The code set was constantly updated in the process to add new arguments, to split codes applied to heterogeneous discourse, and to ensure symmetry between the standpoints (i.e, to actively look for responses to each side's major arguments). Repeated passes through the data were made as the code set evolved. In vivo coding was also used to capture argument metadiscourse.

Direct interactions between individuals with different standpoints were flagged, along with interesting material that could not be captured within the coding scheme. A second cycle of coding adopted a more open coding approach to differentiate themes within the existing codes.

### Corpus 3: Twitter Conversations

Corpus 3 consists of sets of tweets replying to an original post, ranging from 3 to hundreds. This corpus was collected through:

(a) Locating and checking for relevance the conversations in which tweets in Corpus 1 had originally appeared.
(b) Snowball sample: Further Twitter conversations mentioned (e.g., quote-retweeted) in (a).
(c) Convenience sample: Twitter conversations I had been collecting over several years of interest in this topic.

There are 85 conversations in this corpus. Conversation texts were reconstructed using Treeverse and imported into Atlas.ti for analysis, with the exception of several conversations which were too large for capture. They were coded through the provisional and in vivo approaches described above. Finally, the analysis of the FlyLess arguments in all three corpora were checked by posting a summary on Twitter in conversation with several scientists whose discourse is in the corpus.