

Discourse analysis of comments on a climate change op-ed. Part 2

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This working paper is circulated for the purpose of collegial discussion and comment both inside and outside TERC. It has not been peer reviewed.

I. Introduction.

This paper is the second in a series of working papers which analyze successive comment threads responding to one newspaper opinion piece on climate change. Each thread will be analyzed separately, though the analysis of each thread will build on prior work, and an overview essay will complete the series. The series is intended to make visible for discussion and feedback my process in working out the methodological approach and tools suitable to my purposes.

This work is motivated by the view that it is in conversation that community norms are negotiated and their transformations become visible. Indeed, it may often be the case that conversations can be the medium by which transformations are begun, elaborated, or established.

My particular interest is in conversations about climate change, and in preparation for a series of public conversations involving people of diverse perspectives, I am analyzing some samples of on-line discourse to explore key themes and discourse features that may arise in debate about this topic.

Discourse and discussion are both *revealing* and *socially constitutive* activities (Bailey et al. 2014, Condor & Antaki 1997, Schultz 2001, Halliday 1990) that contribute to the development and transformation of social norms. Social norms in turn play an important role in motivating and sustaining social action.

The overarching research question here is:

What are key discourse features of climate conversations among participants with diverse points of view?

Subsidiary questions include:

To what extent is there linguistic evidence of idea exchange, and negotiation of meaning and values? What is the discourse evidence for differing priorities, values, and attitudes that influence communication and collaboration between different sectors of each community network? Is there evidence in the discourse for changes in the participants' knowledge, attitudes, or (espoused) values or priorities?

However, this series of working papers is not intended to answer these questions in more than a provisional sense. Rather, the aim is to elaborate the theoretical framework and methodology for the actual studies to be conducted in focus groups and other settings, for which participants will be drawn from a specific community.

II. Context and theoretical considerations

a. Climate change is on Americans' radar screen, but no national consensus for action consonant with the scientific evidence has emerged. In spite of nationwide efforts to educate the public about climate change, there is strong evidence that Americans are not inclined to see it with the urgency that the science warrants (Leiserowitz et al. 2015, NRC 2013, PriceWaterhouseCoopers 2012). Polling data suggest that while a majority of Americans see global warming as a potential problem, most see it having its effects in the future, 10 or more years away, and on people in developing countries rather than in our own (Leiserowitz et al. 2015, Pew 2013, 2009, Weart 2008). Moreover, the majority believe that climate scientists are significantly divided on the basic question, whether climate change is anthropogenic or not, and many do not seem to include *Homo sapiens* in the list of vulnerable species (Leiserowitz et al. 2013, NSF 2010). Events such as anomalous weather events have some impact on people's perceptions — but only temporarily (Egan and Mullin 2012). Telling, warning, or teaching about climate change has not overcome what one observer called "collective action problems that appear to be beyond our existing ability to resolve" (Rowson 2013).

b. Information alone is not enough. "Conventional strategies" to engender public understanding have not worked (Weber and Stern 2011). The problem facing climate change education may be said to be one of *uptake*: despite ample coverage in all forms of media, people are not persuaded about the phenomenon, and even those who claim to be are often ill-informed about the science (Leiserowitz and Smith 2010), so that opinion can be easily changed with, for example, changes in economic security (Kahn and Kotchen 2010). For knowledge to inform our thinking and other behaviors, it must be, in Dewey's phrase, "saturated with meaning" (Dewey 1925), and this means understanding that learning and acting take place in a local, many-layered, and value-filled context (Bronfenbrenner 1979, Goffman 1986, Geertz 1983). To some extent, when personal encounters with climate change phenomena are put in the context of the scientific consensus, people's opinions can change. Ding et al. (2011) have shown that when people are informed that climate scientists are in almost complete agreement, their evaluation of the climate crisis changes. But there are other factors at work as people make sense of climate change for themselves.

c. Framing, identity and cultural cognition. Considerable research now suggests that how we hear and interpret evidence about a challenging new topic—the fundamental social-psychological process that Goffman called "framing" (Goffman 1986)—plays a critical role in the "uptake" of climate science (Swim et al. 2009, Goebbart et al. 2012, Kahan et al. 2011, 2012, Moser and Dilling 2007). Goffman argued that we make sense of information and experience by means of interpretive "frames." Within these, we assign relative values to information and events, and create meanings about them; we understand the personal implications against a backdrop of social and cognitive preferences, values, and commitments.

Studies of "cultural cognition" (Kahan et al. 2011, 2012), "conservation psychology" (e.g. Clayton and Myers 2009) and "climate change psychology" (Stern 2011, Weber and Stern 2011, Swim et al. 2009) further elaborate the ways in which framing shapes people's engagement with information — and with authorities — about climate change. Thus,

research suggests that education about climate change is education not only for cognitive growth in the strict sense, but also for social and personal change. This aligns with current best practice in science education, which works with learners' current understandings, naive theories, or preconceptions as a necessary point of departure (Bransford et al. 2000, Dewey 1916).

Framing is functional (Burger in Goffman 1986) and one can learn in ways that change one's frames. One essential factor in such learning is the "choice of messenger." That is, people tend to lend more credence to sources who are seen to share their values and interests (Moser 2009, in press, Akerlof et al. 2011). Moreover, such an educational effort cannot be seen as a uni-directional process. Rather, it should be seen as the development of community understanding, which includes both the scientific evidence and also a shared understanding of differential impacts on different sectors in the community, differential costs (financial, social, and psychological) of change for different stakeholders, and differential capacities to respond (Weber and Stern 2011, Moser and Berzonksy 2013).

d. Discourse and community process

1. Very basic premises

Language is the principal means by which our society is created. Social uses of language typically involve both "sending" and "receiving," and very often the receiving of messages includes a response coded in language. For as long as people have been attentive to language use, or indeed human relations, they have known that much can be learned from the give and take of conversation (or its derivatives, written or otherwise). It is not therefore novel to note that analysis of discourse is one possible way to collect data about people's relationships, concerns, attitudes about themselves and others (including their interlocutors). and purposes.

Since Homer (at least) people have also been aware that discourse is used not only to communicate or coordinate, but to *do* things, to change the world in various ways large and small (Gee 2011, Clark 1996, Kennedy 1963). We use it to make requests and demands, to express our condition or to inquire into others', to create models and plans for action, make lists, label streets, identify groups, filiations, and purposes, and so on. By using language we make arguments to persuade, we appeal to people's emotions to comfort, incite, invite, or repel, we can induce imagination and reflection, which can shape how people understand their world, their situation, and the aims of their activities.

2. Types of analysis attended to in this working paper

2.1 Thematic content. An analysis of the content of messages may enable us to answer questions such as "What are the themes that appear? Do they persist throughout the thread? What is their source (e.g. from the article being commented upon, or from one of the commenters)? Who articulates each?

2.2 Rhetorical and pragmatic elements.

An analysis of content, however, is not sufficient to account for what is communicated (and understood) in such exchanges we are analyzing here. Additional insight, I conjecture, will be derived from attention to rhetoric and pragmatics.

It is assumed that comments from an Internet text will be intended to advocate or persuade towards the writer's point of view, or to contest someone else's; the analysis of the arts and techniques of persuasion is central to the study of rhetoric. A common "anatomy" of rhetoric, based in Aristotle's analysis (See <http://humanities.byu.edu/rhetoric/silva.htm>) distinguishes three general strategies: *logos* (arguments from reason), *pathos* (arguments appealing to emotion, and *ethos* (arguments

establishing the authority or credibility of the speaker). For the examination of public discourse, this simple distinction can be remarkably fruitful.

Beyond this classic framework, which tends to focus primarily on "internal" characteristics of an utterance, a rhetorical analysis leads us to examine pragmatic features of the situation in which the text (in this case) or speech takes place. Such features include [a] *audience* (including both the people targeted for persuasion, and the characterization of the audience by the speaker, itself a rhetorical act); [b] *exigence*, that is, the problem or question that makes the utterance important or needful; and [c] *genre* — the kind of speech performance to which the utterance belongs. (Gill and Whedbee 1997). Analysis examines the mechanisms and settings of persuasive speech employed (Bailey et al 2014, Dontcheva-Navratilova 2009, Huang 2007, van Eemeren et al. 1997, Aristotle 1926, Levinson 1993), including argumentation structures, word choice, appeals to reason, emotion, and authority, characterization of audience, and similar language behaviors revealing attitudes, norms, and the social setting.

Clark (1996), based on his view of language use as a kind of joint action, provides several notions with which to explore in more depth the social "surround" of a text, which may help in turn to identify some of the mechanisms by which the community (as represented by the participants in the discourse) constitute, and possibly negotiate their social-political positions (or, alternatively, their models of the situation under discussion, and their evaluations of and preferred responses to it).

Common ground. In an exchange, Clark suggests, people are aware of (keep track of) "common ground," the set of assumptions and common knowledge about the situation in hand that are presumed by all the participants, and in a sense make the exchange intelligible at all. Just as an ecological niche, in Hutchinson's classic formulation as an "n-dimensional hypervolume" (Hutchinson 1957) is so complex as to practically defy complete specification, so the "common ground" shared by interlocutors in a conversation includes a depth and breadth of cultural knowledge and perhaps common experience which is not accessible through a particular exchange (Clark 1996 refers to the "ineffable background" pg. 110). The exchange, however, provides evidence about the key subset of this common ground that make the exchange intelligible to the participants (and an observer). Clarke identifies several kinds of common ground, including "initial state," "current status of the activity" (which may be represented by features of the situation, e.g. the visual representation of the online discussion, showing the turns taken, who is participating, what the growing edges of the thread are), and "public events so far," that is, the history of the exchange (in our case, the discourse event).

However, a key point is that "common ground" is in part given, in part needs to be discovered in the course of the conversation, and in part may need to be constructed, if the activity is to continue as a shared enterprise. Therefore, one can expect that as the discourse continues, areas in which common ground does not exist will be exposed. This exposure then offers the participants various options for response: they can set about building bridges, they can use the disjuncture as an opening to explore in more depth areas of congruence and incongruity, or they can treat the areas not shared as delimiters, rooted in identity or conceptual elements, which hinder or even prevent further communication.

It is important to note that these disjunctions may not only be conceptual, and this realization provides a way to interpret the processes implied by the logos-pathos-ethos distinctions of classical rhetoric. I would suggest that this connection is useful, at least heuristically, because the rhetorical categories can provide a first approximation of the kinds of disjunction or response becoming evident in the discourse. When disjunctions become visible or salient, how do the participants respond, to characterize, evaluate, and

address them? A consideration of this question enables us to link our discussion back to the 3 classical rhetorical "moves."

-- It may become evident that one participant has information that is important, but not yet common property in the conversation, in which case a "repair" (Sacks 1995) might include, for example, supplying the facts, quoting a reference, or providing a link to an authoritative source, to add this information to the common ground for the conversation; this falls roughly into the general category of *logos*, argument on the basis of logic or fact.

-- Another area in which disjunction may be visible, however, is in the nature and tone of the relationship among the participants. An initial presumption of equality, of equal standing, may be called into question, and then the response may include some kind of adjustment or repair (via apology or other peace-making action) — the conversation may in fact shift for a time to negotiating the "rules of engagement" for further conversation. Such a disjunction — whether repaired or not — can play a role in how people interpret or value further statements by the others, as the established (in)equity relationships affect the estimates of credibility made by one participant about another. This general area is most closely related to the rhetorical category of *ethos*, argument from authority.

-- Yet a third form in which disjunction may appear is in the way that the participants represent the values they feel are important in the discussion (or what the stakes are), and how their interlocutors in turn weigh those values. For example, in the debate about the approval of the Keystone XL pipeline, to bring crude oil extracted from Canadian "tar sands" across the middle of the US to the Gulf Coast, proponents of the pipeline place the highest value upon factors such as job-creation, energy independence, limited regulation of economic activity, and similar notions. Opponents may counter these arguments, for example with projections that far fewer jobs will be created than proponents suggest, but their fundamental positive positions have to do with environmental safety issues, implications for mitigation of climate change, and quality of life into the future — issues which are weighed and even construed very differently by the two sides. Quite aside from the factual content of these matters, they are highly emotional, and touch on identity issues which in some sense are the subtext of almost all exchanges having to do with development and environmental protection; this kind of disjuncture is clearly connected with the rhetorical *pathos* strategy, argument based on appeal to emotion.

Note finally that, as alluded to above, the notion of "framing" and "reframing" embraces all of these considerations, and indeed one of the most important responses to a perceived "violation" of assumptions about common ground is to state or revise some aspect of one's frame. Participants may use the discussion of frame elements to diagnose or characterize the nature of the disjuncture (and this may itself be a rhetorical act), and in response may undertake a repair, for example by working to establish constructive links between the different frameworks that have been identified. Whether this framing and reframing creates more shared ground, or deepens the divisions, it is constitutive for this discourse community, and to that extent represents a micro example of social change.

2.3 Linguistic Cohesion. I am interested in evidence that some or all of a thread can be seen as a mutually constructed text. Cohesion analysis enables us to examine a transcribed conversation as a mutually constructed text, the evidence being drawn from a range of devices that constitute cohesion within a text (pronouns, conjunctions, substitutions, lexical cohesion, etc.) (Martin 2001, Halliday & Hasan, 1976).

Halliday and Hasan (1976) articulated 7 general types (with many subtypes) of cohesive devices or "ties," by which a series of utterances are made into a coherent text: 1) Pronominals; 2) Demonstratives; 3) Comparatives; 4) Substitutions; 5) Ellipsis; 6) Conjunction; 7) Lexical.

In earlier work (Drayton & Falk 2003), my colleague, Joni Falk, and I showed that these devices when used in the analysis of the mutually constructed texts of an electronic community, can provide evidence about the attention participants pay to each other, and the intertextuality of the web discourse. First, one can look at the density of the ties between messages (e.g. number of ties per line or sentence), as a first indicator of the responsiveness of the reader/responder to the sender. Second, there are the kinds of ties made. Although a full analysis of the implications of different kinds of cohesive devices remains to be done, we saw evidence that when a writer uses a high proportion of comparative (type 3), lexical (type 7), and substitution (type 4) ties, this is an indicator of careful attention and thematic responsiveness.

In short, such data may provide evidence that the commenters are listening to each other, each shaping or modifying his or her comments in response to others' statements. Indeed, cohesive ties are in some ways the most concrete evidence of the extent to which the discourse sample represents "joint activity," how the juncture can be characterized, and how it is strengthened, made more explicit, extended, or resisted.

This, together with thematic content and rhetorical devices used, can help address questions about who trusts whom, what common ground is shared (if any), which kinds of evidence, and which principles are debatable in this community. It is an open question for future work whether or to what extent a cohesion analysis can detect a change in the relationships or attitudes within the discourse community under analysis.

III. Materials and methods

The material. I searched the archives of the Concord *Monitor*, one of the important newspapers in New Hampshire, for articles and opinion pieces about climate change which might be expected to stimulate active comments threads. After scanning approx 36 such pieces and their comments, I chose a piece entitled "My Turn: Beware climate catastrophe charlatans," by Michael Sununu, published on-line on August 23, 2013. This article, whose author is the son of a prominent Republican political figure, is a strongly-worded attack on the science and motives of those who advocate action to prevent climate change. The article is appended as **Appendix A**.

As one might predict, the article attracted an energetic response in the comments column. The entries in the comments area are time-stamped and threaded, as indicated by indentation for each "level" of response. The 57 comments occur in 12 threads, with the most recent appearing at the head of the comments area. To work in roughly chronological order, this paper is an examination of Thread #11 (second-oldest).

In this thread, #11, there are 4 participants, identified only by their user-names. Each participant contributed 1 post; the thread is presented in **Appendix 2**. The contributors to the thread are (all spelling etc. as in the original):

Bruce_Currie	3 posts
GraftonCharlie	2 posts
ItsRepublic	3 posts
quilteresq	1 post

Two of these participants, Bruce_Currie and GraftonCharlie, were critical of Sununu's statements about climate change science, and showed clear support for the mainstream consensus. In what follows, they are termed *Accepters*. ItsRepublic and quilteresq voiced support for Sununu's position, or opposition to the Accepters; they are termed here *Deniers*. Note on gender references: In what follows, I use masculine pronouns in referring to these participants. Two incorporate male names into their screen-name ('Bruce' and 'Charlie'), the other two do not. I have conjectured that they, too, are male, but there is no

direct evidence, and this decision is based on a stereotype of conservative posters on such comment areas.

The transcript was coded for three categories of evidence: 1) thematic content; 2) rhetorical devices and pragmatic elements; and 3) linguistic cohesion. The representation of the material is problematic, and in this working paper I attempt a different approach from that in Drayton 2014. In this thread there are 9 entries. Each entry in the thread is numbered as [threadnumber]. An entry in the thread is indicated by a decimal point, thus the first entry in this thread is 11.0 (the first). A reply to entry 11.1 is indicated by a further decimal point, thus 11.1.1, and so on. Thus, the third reply (therefore the 4 entry) directly to 11.1 would be 11.1.3, but if the first 4 entries each reply to the prior entry, the fourth entry would be numbered 11.1.1.1.1.

For the purposes of this working paper, the Op-Ed piece to which the thread is responding is appended as Appendix 1; the full thread, coded, is appended as Appendix 2; Appendix 3 is a chart showing some cohesive ties identified in the analysis.

IV. Results

A. Thematic analysis

Three central themes were identified in this thread: SCIENCE, FRAMING, and ARGumentation. Items were coded by SCIENCE if they treated specific subject matter, adduced scientific evidence related to climate change, or addressed the nature of science. Items coded as FRAMING addressed ideological issues, characterizations of opponents, or other issues expressive of value and judgment. Items were coded as ARG if they explicitly addressed the form of arguments, issues of validity, inference, and similar subjects.

SCIENCE: Of the 4 participants, 3 explicitly address the science at issue, whether directly, or by clear inference (on the basis of linguistic cohesion). Within this general category three subcategories can be distinguished: SCIENCE[1] articulates a scientific narrative or theory; SCIENCE[2] statements cite specific data or studies; SCIENCE[3] statements address the nature of science (NOS).

Both the Deniers and the Accepters make SCIENCE[1] statements. For example, quilteresq, a Denier, says:

After 19 years of both increasing CO₂ and temperatures, followed by 16 years of increasing CO₂ and stagnant temperatures, perhaps it's time to turn our attention to those vague "natural factors" that seem to be just as important. [11.1.2]

He has clearly read sources he trusts, from which he concludes that global temperatures have "stagnated," during a period in which CO₂ emissions have continued to increase. This, he believes, contradicts a narrative in which CO₂ increases must lead to a monotonic rise in surface temperatures. Since he does not deny that temperatures did increase during the past century, he concludes that an alternative explanation, involving unspecified "natural factors" is rendered more plausible. He thus is articulating an alternative theory, which he believes consistent with the science, but he provides no references or data.

The Acceptor, Bruce_Currie in [11.1] mentions several points currently reported as established in the scientific literature, without citing specific data or studies as warrant:

climate change is much more than computer models. Observations of diminishing Arctic ice extent, continued ocean warming, and sea level rise, indicate that the planet continues to warm,

SCIENCE[2] statements, which do cite specific sources or data, are made in this thread only by the Acceptor, Bruce_Currie. In his second post, replying to quilteresq's assertions (in [11.1.2] just mentioned, he addresses a key assertion in that message, the claim that climate warming has stagnated. Bruce_Currie differentiates, as the scientific literature does, between global warming and surface temperature warming, making particular reference to deep ocean warming. To support this, he cites a specific study, and quotes from its abstract:

"The elusive nature of the post-2004 upper ocean warming has exposed uncertainties in the ocean's role in the Earth's energy budget and transient climate sensitivity. Here we present the time evolution of the global ocean heat content for 1958 through 2009 from a new observation-based reanalysis of the ocean. Volcanic eruptions and El Niño events are identified as sharp cooling events punctuating a long-term ocean warming trend, while heating continues during the recent upper-ocean-warming hiatus, but the heat is absorbed in the deeper ocean...." Geophysical Research Letters Volume 40, Issue 9, pages 1754-1759, 16 May 2013
<http://onlinelibrary.wiley.com/doi/10.1002/grl.50382/abstract;jsessionid=C0091520A373CF0765F1AF2E52550843.d01t02>

In a later post, in differentiating between deniers and skeptics (who are willing to change their minds based on the evidence), he refers to the BEST (Berkeley Earth Surface Temperature) study, but does not provide specific sources.¹

SCIENCE[3] statements address the nature of science, and the roles of doubt, evidence and theory in science. In this thread, Bruce_Currie is the primary voice articulating these ideas, as in post [11.1.3.1]:

Science advances based on the preponderance of evidence. Hypotheses are developed and tested, then re-tested. If they fail, they are rejected. There is no alternative theory that works to explain the current warming; only man-made greenhouse gases being added to the atmosphere accounts for the warming. Skeptics (not to be confused with deniers, who are ideologues) are always free to retest the data (that's exactly what the BEST study did). Their study confirmed the consensus view on the warming and its sources.

GraftonCharlie briefly addresses the role of evidence in one post [11.1.1] : "He cites no studies that support his position."

Neither of the Deniers engages with any depth with the SCIENCE topics, when they are contradicted. quilteresq proposes an alternative theory based on the idea that global

¹ This study, conducted by Robert Muller, was funded by the wealthy activists and climate deniers the Koch brothers. Muller began the study questioning the claims of a warming trend, and human contributions to it. By the end of his comprehensive review of the evidence, he publicly asserted that his initial position was not consistent with the evidence. See "The conversion of a climate-change skeptic," <http://www.nytimes.com/2012/07/30/opinion/the-conversion-of-a-climate-change-skeptic.html?pagewanted=all&r=0>.

warming has "stagnated," but when he is contradicted by Bruce_Currie he does not reply; nor does he contest the characterization of the NOS that Bruce_Currie articulates.

FRAMING. Framing can be seen in the posts of all participants in this thread. Several of the posts include characterizations of opponents in the wider debate about climate change, with only oblique reference to the discussants.

GraftonCharlie, an Acceptor, characterizes Sununu, the Op-Ed author, of seeking to delegitimize climate scientists and those who accept the scientific consensus:

By referring to scientists with whom he disagrees as charlatans and asserting that they have issued their reports for self-serving purposes, Mr. Sununu is actually trying to delegitimize their work and to persuade the public that they are worse than unreliable - that they are lying in order to get rich. [11.1.1.]

ItsaRepublic, a Denier voice, while apparently willing to concede that climate scientists are not consciously deceptive, still characterizes them as deluded or biased owing to various self-interested motives, mostly financial:

They may NOT be charlatans but they are influenced by ideology, grants and funding from politicians and personal beliefs. [11.1.1.1.]

The same voice, ItsaRepublic, posts a lengthy satirical message designed to portray the mindset of Accepters:

Definition: "Screed"-any opinion with which a progressives disagrees. Definition: "Denier"-anyone who challenges the assumptions of climate change. Definition: "Deniosphere"-That place that exists where the ignorant masses who challenge the assumptions of climate change live. Definition: "Ignorant Masses"-Group of people who do not believe as the enlightened, self congratulatory and obvious intellectually superior progressives believe. Definition: "Charlatan"-Anyone other than a high minded progressive; anyone who does not walk in knee jerk lockstep to all science. A person who dares to challenge assumptions of progressives. Definition: "Ideologue"-An individual who places ideology above inclusion, tolerance and diversity of views and who will not allow his/her assumptions to be challenges, using "science" as a weapon and absolute to shout down any opposition standing in their way to reaching their ideological end.

Thematic elements discernible in this post include

progressive vs [his position — nonprogressive]
elitism/superiority vs "ignorant masses"
"real" science vs ideology ("science")
ideology vs openness/diversity/inclusion

The principle effect of this post is to frame the debate between Accepters and Deniers roughly as one between unbiased, skeptical, and "nonelitist" people, versus an elite whose reading of the science (or rejection of Deniers' arguments) as deeply shaped by presumptions of superiority which make them resistant to any contradictory arguments or information. ItsaRepublic in an earlier post articulated in addition that self-interest was an important motivator for climate scientists.

In a direct answer, in the next post, Bruce_Currie "counter-frames," by offering corrected formulations of ItsaRepublic's satiric glossary, and then reinforces his position by providing the account of NOS quoted above:

Sunnunu introduced the term "charlatan" in his screed. A screed plays fast and loose with the facts, or is highly selective in presenting them- an accurate description of his "essay". "Ignorant" describes people who are unwilling, or unable to look at facts. "Ideologues", contrary to your definition, place their beliefs ahead of the facts on issues. While there are often gray areas and unknowns on any give topic, the language you use: "inclusion, tolerance, diversity" is language that elsewhere is mocked by the right. Here they are merely a rhetorical flag of convenience for you... Science doesn't work that way. Science advances based on the preponderance of evidence. Hypotheses are developed and tested, then re-tested. If they fail, they are rejected.... [11.1.3.1.]

ARG. In this thread, several posts address the quality or nature of the argumentation of their opponents. This category overlaps with statements about NOS (coded as SCIENCE3 above), but the statements assigned to this them are more general in import. As with statements about NOS, these statements about argumentation come from the Accepters, not the Deniers.

This issue is the primary concern of GraftonCharlie in both his posts:

He [Sununu] speaks of critical thinking but makes bare assertions that he fails to substantiate. He cites no studies that support his position. The column appears to be propaganda, and it is not persuasive. [11.1.1]

you've [ItsRepublic] identified some researchers you disagree with, but have provided no information whatsoever that supports your position. You've made broad, unsubstantiated statements but you've given us no reason to believe you. [11.1.1.1.1]

Bruce_Currie also addresses this general theme, as part of his long post which occurs at the end of this thread [11.1.3.1], cited above. This post is a reply to ItsRepublic's satirical framing message in the previous post. After characterizing ItsRepublic's rhetorical tactics, Bruce_Currie continues to his more general statement about the role of evidence which links the general line of reasoning about scientific process with that of proper argumentation set out by GraftonCharlie (without direct reference):

It's effectively arguing that scientists should accept "flat-earthers" as having equal validity to "round-earthers". Science doesn't work that way. Science advances based on the preponderance of evidence.

Reflections on thematic analysis. While this analysis has identified 3 separate themes, viz. SCIENCE, ARG, and FRAMING, a reading of the thread as a whole suggests that this conversation is predominantly a framing exercise: the Deniers and the Accepters in effect are each articulating a frame of reference in which to assign specific value or meaning to scientists, evidence, argumentation, and the nature of the opposing "camp." Each has a robust and elaborated evaluative structure which allows for the interpretation of, and response to new ideas, information, or arguments. Elements of these frames have been visible in both threads analyzed so far; they are familiar from research on public opinion about climate change, and we will return to them in the discussion below. The frameworks also serve to orient the rhetorical practices and pragmatic elements detectible in the thread, to which we turn in the next section.

B. Rhetoric and pragmatics, cohesion and conversation

The purpose of this series of working papers is to develop a set of tools, concepts, and analytical approaches which can serve us as we begin to examine live conversations about climate change and related issues in diverse settings. The particular thread being examined in this paper, Thread 11, is relatively brief, with a small group of participants. Given that the material available is not copious, I will not develop extensive separate analyses of the linguistic cohesion, rhetoric, and pragmatic elements, but treat them together in this section.

Audience. What audience or audiences enable us, and the participants themselves, to make sense of the messages in this thread? The setting of this exchange is public, but the form is letters or messages in response to an op-ed piece, a distinctive genre. A first expectation might be that the participants would be writing directly to the author of the op-ed, Sununu, but this is rarely seen in such comment-areas. An alternative expectation might be that these exchanges belong to the "letters to the editor" genre, in which the form requires that the letter-writer address the (usually anonymous) editor to express opinions, or correct mistakes found, in respect of a piece that the editor has offered to the readership. Under the conventions of the "letters to editor" genre, however, the actual and primary intended audience is the whole readership of the newspaper, cast as "eavesdroppers" to an open letter.

In the electronic form of this genre, the medium allows for rapid cycles of publication and reply, and comments are not under the same constraints of space and time as letters in a printed newspaper are. The tempo approaches that of email, or even of conversation, with multiple exchanges possible, thus allowing for the emergence of such conversational features as adjacency relationships, repair, and topic management. Yet it differs from conversation because it is a written medium the prior utterances in the exchange are kept visible and available for reference, and the author of each contribution can read, self-edit, and revise the message before posting it. Such differences in medium and tempo can be expected to distinguish a comments exchange from an actual conversation among a few people of differing views.

In such open letters, as in conversations, there may be discernible in each contribution multiple voices, e.g. the voice of personal opinion, the voice of quoted authorities, the voice of group affiliation. In addition, however, the broader, indeterminable audience of readers, "eavesdroppers," are present, and the writer's consciousness of this invisible audience may shape how messages are written, and the rhetoric and logic of the expression. The purpose of posting is at least in part to advocate or defend a position, and the framework that supports it and gives it coherence. Thus, some at least of the participants identify their "opponents" (and by implication themselves) as members of some faction or interest group (in this case labeled by the researcher "deniers" and "accepters.")

This resonates with a statement by Widdowson (2004): "Whereas the broad macro-context of a culture is relevant to an ethnographic account of generic typicality, discourse is actually realized in the local microcontext of situation with participants not simply playing out social roles, but acting as individuals. So it is not only that the context is a pre-existing cultural construct to be applied, but also something that is created in the discourse process itself." (pg. 139).

In the present thread, there are three sub-threads (11.1.1, 11.1.2, and 11.1.3), stemming from Bruce_Currie's message starting this thread, a response (11.1) to Sununu's article. The next two messages are responding directly to this founding response, but by the 3rd post, we are already seeing the focus shift, and the messages are answering Bruce_Currie, but also the prior posters.

Cohesive ties among these messages reflect this pattern. [Figure 2 here.] In [11.1], Bruce_Currie speaks directly to Sununu's article, in the mode of a letter to the editor. Lexical ties include *Sununu, ENSO, models*. These ties, in a message that recounts points made in Sununu's op-ed, and then addresses errors in those points, do not link to nor address other messages. An affective element (pathos) is introduced by Bruce_Currie's use of the word *screed* to characterize Sununu's article. GraftonCharlie's first message [11.1.1] is tied to Bruce_Currie's by directly addressing him by his first name. He implicitly endorses Bruce_Currie's statements with the phrase not only that, in which that has no evident reference except to the whole set of points made. Sununu is referred to in the third person, but since the direct exchange is between GraftonCharlie and Bruce_Currie, Sununu is now cast as a shared antagonist, whom Bruce_Currie and GraftonCharlie are opposing or correcting. The polarity is emphasized both by the term *screed* to describe Sununu's article, and by GraftonCharlie's negative citation of Sununu's term *charlatan* (referring to climate scientists). The polarity is further strengthened by GraftonCharlie's use of words that attribute or suggest Sununu's motives or purposes: *seeks to delegitimize, to persuade the public, lying in order to get rich, appears to be propaganda*.

In his reply [11.1.1.1], ItsaRepublic ties to GraftonCharlie with the word *charlatan* and *they* (referring to climate scientists or perhaps their allies). He seems to retreat from a claim of dishonest intent (*they may not be charlatans*), but insists that they are untrustworthy since their science is influenced by a range of factors introducing bias. In an addendum to his post [11.1.1. 2], he adds two names as examples of biased scientists, Phil Jones and Michael Mann.² At this point, this concession could have provided an opening to a different conversation, about the NOS or something similar. GraftonCharlie acknowledges the moderated tone with a skeptical phrase (*nice try*), but then continues with a strongly reinforced characterization of Sununu's column as *propagandistic* and containing *deficiencies*. He also asserts that ItsaRepublic has provided no evidence for his claims, and dismisses the use of the names of Jones and Mann as contentless.

In the next thread [11.1.2, 11.1.2.1], quilteresq and Bruce_Currie return to discussing science. Quilteresq's reference to "natural factors" which might drive climate change is a tie to Sununu's column, and represents a long-standing counter to the claims of climate science. While accepting that there is evidence for some warming, this line of argument attributes that warming to "natural causes," that is, nonhuman factors of various kinds. For example, Sununu speaks of "the sun, ocean patterns, and myriad other factors." In referring to this list, quilteresq notes the vagueness of the list, which suggests some humorous or critical distance, or tacit recognition that the alternatives to climate science are as yet underdetermined. The tone is not combative, and Bruce_Currie replies with the most

² These two scientists achieved important symbolic status in the Climategate controversy of 2009 - 11. In this episode, a large number of email messages sent by several climate scientists were stolen from university servers in Britain and leaked selectively to the press. In these emails, there are exchanges in which the scientists discuss specific research findings, presentations or publications under development, and issues and strategies related to messaging, that is, communicating their findings to the public, and dealing with deniers. These messages were attached by deniers as evidence of conspiracy and scientific malpractice. While many independent investigations have found these charges groundless (see http://www.ucsusa.org/global_warming/solutions/fight-misinformation/debunking-misinformation-stolen-emails-climategate.html#.VPOf8UvGerk), the names of the scientists involved, especially Michael Mann and Phil Jones, have continued to be used as shorthand ways to express distrust of climate scientists, and to attribute dishonest motives.

substantive post of this thread, with a long quotation from, and citation of, a research article. This short subthread, unlike the others, is occupied by arguments from science and reason (logos).

The final subthread, including [11.1.3] from ItsaRepublic, and [11.1.3.1] from Bruce_Currie is more or less explicitly antagonistic. ItsaRepublic ties to earlier posts with several terms (*charlatans*, *screed*), but then imports a series of other terms which can be related to a broader, external public debate (some of which have appeared already in Thread 12, in the first in this series): *ideologue*, *tolerance*, *diversity of views*. The word *science* is marked as valenced by "scare quotes" ("*science*"). Other terms which in this context are used rhetorically include *weapon*, *shout down*, *dares*, *high-minded*, *knee-jerk*.

The rhetorical genres here are *ethos* — contesting the authority or trustworthiness of one side, asserting it for the other — and *pathos*, invoking emotional terms that suggest power/oppression relationships, such as *ignorant masses* vs *high-minded*, *self-congratulation*, *intellectual* (as part of *intellectually superior*). These are all words that define oppositions, and words like *weapon* and *opposition* frame the disagreements about climate change as a contest or *agon*, in effect a war, with the implication that the expected outcome will entail victory for one side, defeat for the other.

V. Final reflections

In this thread, the discourse (as in Thread 12) is oppositional. The ties between the posts are largely lexical, as key themes, almost all first stated in some form by the Sununu op-ed piece, are taken up both by the "deniers" and by the "believers" of climate change. Interestingly, the specifically scientific topics (e.g. models and their limitations, CO2 as a driver of warming, role of the sun and "other factors") do not continue throughout. When substantive points about the science are raised, Bruce_Currie replies in depth and in detail, with citations, and these points are not debated further by the deniers.

The most persistent themes — the credibility of scientists, the accusations of ulterior (financial and ideological) motives — predominate. "Charlatan" or its variants, first appearing in Sununu, shows up in more than half the posts, "scientists/researchers/Jones/Mann" tie 6 out of the 9 posts.

As in Thread 12, the first thread analyzed in this series, terms expressive of implicit underlying framing become salient and explicit as the discussion continues. Indeed, in ItsaRepublic's final turn in this exchange, we see a satirical glossary which establishes the writer's interpretation not only of climate scientists, but of those who believe them. The characterization is complex, in that it is a portrait of the opposition's view of ItsaRepublic's allies:

"Denier"-anyone who challenges the assumptions of climate change....Definition:
"Charlatan"-Anyone other than a high minded progressive; anyone who does not walk in knee jerk lockstep to all science.

As in the earlier thread, the framing of self and opposition is both explicit and implicit. For example, in the course of this post, ItsaRepublic writes:

Definition: "Ignorant Masses"-Group of people who do not believe as the enlightened, self congratulatory and obvious intellectually superior progressives believe. Definition: "Charlatan"-Anyone other than a high minded progressive; anyone who does not walk in knee jerk lockstep to all science. A person who dares to challenge assumptions of progressives.

As in Thread 12, the framing moves from any link to the content of the scientific points made in earlier posts, or even debating the scientific claims made by Sununu, to a characterization of "non-deniers" as assuming to themselves an unassailable social status as part of which the attitudes of their opponents are dismissed not as invalid (empirically or logically) but as unworthy. There are possible implications of class tension, or at least power differentials, which in some sense are the most important matters at issue, since they are seen to taint any assertions of fact, or claims to credibility based on empirical criteria.

Indeed, the one exchange in which any concession is made to an opponent only sharpens the focus on credibility and "cultural cognition" (to use Kahan's phrase).

11.1.1.1 ItsaRepublic wrote:

08/24/2013

They may NOT be charlatans but they are influenced by ideology, grants and funding from politicians and personal beliefs.

It is precisely in the area appropriate to Aristotle's ethos (appeal to personal authority) that this debate is centered, and despite some attempts to bring forward evidently verifiable facts about temperatures, ice-melting, etc., the use of empirical data is either undercut by questions of credibility, or indeed used as part of the argument to establish or destroy credibility. In a way, "negative ethos" is the most salient theme in these exchanges, as epitomized in the definitional statements quoted above.

But credibility is not the only value at issue. In this context, Clark's notion of *common ground* (Clark 1996) is apposite. Over the course of this thread, as credibility is contested, primarily rhetorically, but also with empirical claims about climate, as well as about climate scientists' motivations or purpose, we see no success in establishing even provisional common ground between the two main points of view. One purpose that Bruce_Currie may be attempting to achieve, by his detailed citations of scientific studies, and indications of well-established empirical findings, is to find some one thing that cannot be refuted on the basis of a "values critique" or imputation of base motives. Yet the stance of the denier voices in the exchange is in effect to question even the possibility of common ground based on the way the world is; the implication is that you report the world the way you want it to be, and so even your thermometer readings are ideologically conditioned.

There is, as suggested above, the possibility of negotiating common ground over the course of an exchange, even when none is apparent or conceded at the outset. It was proposed earlier that when a disjunction between the participants becomes evident, they may move to evaluate and address it, as a prior issue which must be addressed before conversation can actually happen. Indeed, we saw in Thread 12 (Drayton 2014) that much attention was paid (inconclusively) to the nature of argumentation. Such exchanges, if pursued constructively, can serve to establish rules for the engagement, which themselves will constitute the first area of common ground. In this current thread, the participants do not make progress.

I stated the overall research questions I am addressing thus:

The overarching research question here is:

What are key discourse features of climate conversations among participants with diverse points of view?

Subsidiary questions include:

To what extent is there linguistic evidence of idea exchange, and negotiation of meaning and values? What is the discourse evidence for differing priorities, values, and attitudes that influence communication and collaboration between different sectors of each community network?

These reflections go some way, I think, towards answering these questions, and the theoretical apparatus developed for this paper provided a useful, and apparently adequate, set of terms, tools, and distinctions for addressing the question. At the end of the first paper in this series (Drayton 2014), I posed two methodological questions:

1. What analytic approach best suits this material?

I concluded in the first piece in this series that "A stronger characterization of these approaches (more distinctions and better representation) will be necessary in order to further test this conclusion, and should be part of the analysis of the next thread." In this paper, I have elaborated the rhetorical/pragmatic framework for this project, and this has enabled a richer description of the thread.

In the first paper in this series, key themes emerging from the exchanges were characterized as credibility, motive, and rhetorical framing around climate action. The exchanges in that thread were best characterized arguments from emotion (pathos), or authority (ethos), including "negative authority," attacking one's opponent by association with persons (such as Al Gore) judged to lack credibility.

In this paper, the exchange contains several exchanges about the science of climate change. The Accepters cite published work, the Deniers make counterfactual assertions about some climate science, but primarily raise *ad hominem* objections to the scientists as a category and a few by name.

Notably, however, in 6 of the 9 messages, argument and framing are explicitly addressed (and contested). There is no engagement in the exchanges, however, which attempts to develop common understandings. "Common ground" becomes salient, as discussed above, and it is interesting to consider whether the medium of exchange makes some contribution. In the first place, the written exchange may be laborious enough to be limiting to the extended discussion that would probably be needed for negotiation of common ground. Moreover, there is not present in the discussion anyone who might play a broker between the Acceptor and Denier positions, as a moderator (either on line or in an in-person conversation) might do.

Reflecting on the work so far, I can see that, while my graphical representation of the data analysis makes my coding more explicit than in Drayton 2014, it lacks sufficient granularity on at least two points.

a. Unit of analysis. I have varied between "utterance" and "line." The former focuses on meanings, the latter on position breaking across sentence structure. This difficulty is perhaps most evident in several entries in this thread in which coding by the line, or even by the sentence, would by itself force an artificial repetition of coding, as if each line or sentence were an isolated event. For example, in the entry 11.1.2.1, Bruce_Currie posts a multi-line paragraph which constitutes in effect a miniature essay, with introductory sentences, then an extract from a scientific article, followed by its URL. A line-by-line analysis would be unrevealing here. So in the next piece in this series, I need to address the question of unit of analysis, and of representations, which will allow fine-grained coding, but also include the larger units in a way that is both well-defined and contributes material to the analysis.

b. Coding refinements. While the theoretical framing of this project has provided very top-level, and abstract initial codes, all the rest of the coding was emergent. There are two important weaknesses here. First, the initial coding structure does not completely reflect the theoretical framework, especially with respect to the rhetorical/pragmatic analysis. Second, the emergent codes for all themes need to reflect finer distinctions discernible in the data. For example, the ARG codes probably could be more elaborated, as could the RHETORICAL codes. So in the next piece in this series, I need to make the coding scheme more complete, and therefore (I hope) more rigorous. As part of that work, I will develop a code-book, and test the codes with a second coder, working to achieve acceptable levels of inter-rater reliability.

The other key question about the design of the study posed above is:

2. How can this work inform what data we collect, and what analysis we use, to understand the experimental conversations about climate change which we intend to convene?

The answer given earlier was that "The present short study does not yet enable me to address this question, so it stands for the future." This remains more or less the state of play, but one conjecture that is of interest is this: If the search for common ground had been made explicit, and taken as a shared goal; or if there were a shared goal for the conversation, accepted as a stipulated common ground, so that it moved, so to speak, into a different genre, would that have enabled the discourse to begin to negotiate issues of credibility/authority? If so, would that affect the evaluation of, or function of, empirical data, as part of the conversation? How long a conversation would be required to test this conjecture?

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Appendix A. The article

My Turn: Beware climate catastrophe charlatans

Michael Sununu

The *Monitor* is correct in asking when the tipping point on “climate change” will be reached (editorial, Aug. 21). But the editors fail to understand the real tipping point we should be asking about is this: When are we going to say enough to the climate catastrophe charlatans?

The science of the atmosphere, the sun, the oceans and everything else that affects our climate is incredibly incomplete. How incomplete? One of the biggest impacts on global climate over seasonal and annual time periods is the El Nino Southern Oscillation – an indicator of the changes in temperatures over the tropical Pacific. We have all heard of El Nino and how it can have major effects on temperatures and precipitation around the globe. What most people don't know is that none of the climate models are capable of forecasting this effect even a year in advance, never mind the 100-year forecasts. If climate models cannot properly represent these climate effects (as well as other major climate elements) even over short time periods, why do we think they can forecast climate for the next century? They can't.

The reality is that the models that drive climate hysteria have failed after only a few dozen years of forecasting. These models are the basis for all the claims of temperature increases, loss of ice, loss of snow, sea level rise, hurricane forecasts and every other scare tactic in the fraudsters' book. The circulated drafts of the upcoming Intergovernmental Panel on Climate Change report have charts that show the poor track record of the models, but unfortunately the climate change industry (the same industry that writes the IPCC reports) will tuck this information away in a dark corner and not discuss either the data or the implications of this uncomfortable fact.

What is disappointing is not just that we have an entire industry whose existence relies on a lack of critical discussion about the foundations of its theories. The real tragedy is that our elected officials and other institutions have refused to talk about the real issues, or do not understand enough about the climate to have a discussion – yet still parrot out the scare tactics. This was driven home in the recent reporting of the dialogue at Saint Anselm College on green jobs. Asked about how believers should address questions about climate change, Cameron Wake of the University of New Hampshire said, “Don't get bogged down in debating the science.” Why would he say this? Because the “science” arguments are running into the brick wall of real data, and real science that calls into question the underlying premises.

For example, has the *Monitor* looked at the models that are the foundation of all these predictions and questioned why current global temperatures haven't risen in more than 15 years? Has it questioned why current temperatures are beyond the range of uncertainty of the models? Has it asked why we should put faith in global models that don't understand the impact of the sun (by far the largest engine of heat and energy for the planet), the link between the oceans and the atmosphere, ocean temperature patterns and other major climate drivers? How then, given this track record, can the IPCC, Iowa state Sen. Rob Hogg, Cameron Wake or the Concord *Monitor* claim 95 percent certainty in anything having to do with our climate?

The second derivative of this lack of critical thinking is that most “climate change” studies are based on the outputs

of these models. Any responsible elected official, bureaucrat or newspaper should ask the purveyors of this material this: “If the models are clearly flawed and are making projections that are already beyond acceptable error ranges, why should we give any weight to a study based on the model outcomes?” The logical, responsible answer is that they shouldn't. Unless there can be better modeling and proven understanding of how our climate is impacted by the sun, ocean patterns and myriad other factors, then climate catastrophe stories should be relegated to the trash. That this material is used for setting policy at the state and national level is just another travesty thrust upon us by these con artists. There will no doubt be theories, adjustments and other excuses as to why this “delay in warming” is due to mankind, why the models aren't working, why we should still be scared. They are only theories and excuses.

The climate changes. That is a fact. Exactly how and why is still unknown. Anyone who tells you differently is selling you snake oil and taking your money. Unfortunately for all of us, climate scientists, (and the catastrophe charlatans who make money off their efforts) suffer from the hubris of not admitting what they do not know. The rest of mankind is suffering from it.

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APPENDIX 2: DATA AND CODING

<p>Themes rhetoric cohesion other</p> <p>Thread 11</p> <p>11.1 Bruce_Currie wrote:</p> <p>08/24/2013</p> <p>Sunnunu manages a remarkable feat: not once in his screed does he mention greenhouse gases or CO2 in connection with global warming. Sunnunu is conflating two different things:, El Nino/Southern Oscillation (ENSO) predictions and climate projections of future warming, and then claiming that because the one can't be predicted accurately yet, climate models that project increasing warming must also be flawed. It's true that scientists are having a hard time predicting El Nino/La Nina events more than 6 months ahead, but this fact has little to do with climate models that project future warming. Nor is it correct to say the climate models have "failed" because they haven't predicted the current slowing of surface warming. Instead, the current warming is at the low end of model projections. If the warming continues to slow, or stops (unlikely, alas) for another decade, then it might be time to say the models have "failed". But not yet. Finally, climate change is much more than computer models. Observations of diminishing Arctic ice extent, continued ocean warming, and sea level rise, indicate that the planet continues to warm, and suggest that those who claim otherwise are the real charlatans.</p> <p>11.1.1 GraftonCharlie wrote: 08/24/2013 Bruce - it's worse than that. By referring to scientists with whom he disagrees as charlatans and asserting that they have issued their reports for self-serving purposes, Mr. Sununu is actually trying to delegitimize their work and to persuade the public that they are worse than unreliable - that they are lying in order to get rich. He speaks of critical thinking but makes bare assertions that he fails to substantiate. He cites no studies that support his position. The column appears to be propaganda, and it is not persuasive.</p> <p>11.1.1.1 ItsaRepublic wrote: 08/24/2013 They may NOT be charlatans but they are influenced by ideology, grants and funding from politicians and personal beliefs.</p> <p>11.1.1.1.1 GraftonCharlie wrote: 08/25/2013 Nice try, but your comments do not go to the deficiencies or the propagandistic nature of the column. Again, you've identified some researchers you disagree with, but have provided no information whatsoever that supports your position. You've made broad, unsubstantiated statements but you've given us no reason to believe you.</p> <p>11.1.1.2 ItsaRepublic wrote: 08/24/2013 Phil Jones, Michael Mann?</p> <p>11.1.2 quilteresq wrote: 08/24/2013 CO2 is turning out not to be the demon gas it's been made out to be. After 19 years of both increasing CO2 and temperatures, followed by 16 years of increasing CO2 and stagnant temperatures, perhaps it's time to turn our attention to those vague "natural factors" that seem to be just as important.</p> <p>11.1.2.1 Bruce_Currie wrote: 08/25/2013 Not so...temperatures are not "stagnant". Surface warming has slowed its rate of increase- but it has not stopped. Meanwhile, warming of the deep oceans has increased. From the abstract of "Distinctive climate signals in reanalysis of global ocean heat content" "The elusive nature of the post-2004 upper ocean warming has exposed uncertainties in the ocean's role</p>	<p>rhetoric,framing science2 science 1 argument rhetoric--- ethos science3 science1 science1 science1 science2 rhetoric science3 science2 rhetoric/argument, pathos; framing</p> <p>cohesion</p> <p>rhetoric/ethos framing cohesion argument, cohesion argument argument</p> <p>rhetoric/ethos</p> <p>cohesion arg rhetoric arg arg arg arg</p> <p>science2, cohesion</p> <p>sci1 cohesion fram science2 cohesion cohesion sci 2 cohesion sci1</p> <p>sci2 cohesion sci2 sci2</p>
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<p>in the Earth's energy budget and transient climate sensitivity. Here we present the time evolution of the global ocean heat content for 1958 through 2009 from a new observation-based reanalysis of the ocean. Volcanic eruptions and El Niño events are identified as sharp cooling events punctuating a long-term ocean warming trend, while heating continues during the recent upper-ocean-warming hiatus, but the heat is absorbed in the deeper ocean. In the last decade, about 30% of the warming has occurred below 700 m, contributing significantly to an acceleration of the warming trend. The warming below 700 m remains even when the Argo observing system is withdrawn although the trends are reduced. Sensitivity experiments illustrate that surface wind variability is largely responsible for the changing ocean heat vertical distribution. "Geophysical Research Letters Volume 40, Issue 9, pages 1754*1759, 16 May 2013 http://onlinelibrary.wiley.com/doi/10.1002/grl.50382/abstract;jsessionid=C0091520A373CF0765F1AF2E52550843.d01t02</p> <p>11.1.3 ItsaRepublic wrote: 08/24/2013 Definition: "Screed"-any opinion with which a progressives disagrees. Definition: "Denier"-anyone who challenges the assumptions of climate change. Definition: "Deniosphere"-That place that exists where the ignorant masses who challenge the assumptions of climate change live. Definition: "Ignorant Masses"-Group of people who do not believe as the enlightened, self congratulatory and obvious intellectually superior progressives believe. Definition: "Charlatan"-Anyone other than a high minded progressive; anyone who does not walk in knee jerk lockstep to all science. A person who dares to challenge assumptions of progressives. Definition: "Ideologue"-An individual who places ideology above inclusion, tolerance and diversity of views and who will not allow his/her assumptions to be challenges, using "science" as a weapon and absolute to shout down any opposition standing in their way to reaching their ideological end.</p> <p>11.1.3.1 Bruce_Currie wrote: 08/25/2013 Sunnunu introduced the term "charlatan" in his screed. A screed plays fast and loose with the facts, or is highly selective in presenting them- an accurate description of his "essay". "Ignorant" describes people who are unwilling, or unable to look at facts."Ideologues", contrary to your definition, place their beliefs ahead of the facts on issues. While there are often gray areas and unknowns on any give topic, the language you use: "inclusion, tolerance, diversity" is language that elsewhere is mocked by the right. Here they are merely a rhetorical flag of convenience for you. It's effectively arguing that scientists should accept "flat-earthers" as having equal validity to "round-earthers". Science doesn't work that way. Science advances based on the preponderance of evidence. Hypotheses are developed and tested, then re-tested. If they fail, they are rejected. There is no alternative theory that works to explain the current warming; only man-made greenhouse gases being added to the atmosphere accounts for the warming. Skeptics (not to be confused with deniers, who are ideologues) are always free to retest the data (that's exactly what the BEST study did). Their study confirmed the consensus view on the warming and its sources.</p>	<p>science2</p> <p>cohesion rhetoric framing argument framing argument rhetoric, argument framing</p> <p>cohesion, framing</p> <p>cohesion arg framing cohesion rhetoric cohesion</p> <p>framing sci3</p> <p>framing, rhetoric</p>
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Figure 2 APPENDIX 3
Lexical cohesive links in Thread 11
First introduction of word indicated in red

Sununu	bruce_currie	GraftonCharlie	Itsarepublic Phil Jones, Michael mann	<i>ItsaRepublic</i>	GraftonCharlie	quilteresq	bruce_currie	ItsaRepublic	Bruce_Currie
	screed CO2 greenhouse gases	studies			Researchers	CO2, CO2, CO2, demon gas		screed	screed, screed
scientists	scientists	scientists		they, they	researchers [synonym with scientists]				scientists
slowing Charlatans models model limtations ideology sun, ocean patterns, other factors	Charlatans models model limitations	charlatans		charlatans		stagnant temperature s	temper- atures not stagnant		charlatans ideologues
				ideology				ideologue	
					natural factors			ignorant	ignorant
El Niño	El Niño. ENSO							inclusion	inclusion
make money, industry				grants, funding				tolerance	tolerance
								diversity	diversity
								"science"	science, science
								deniers	deniers
								skeptics	≠ deniers