Naturally Occurring Argument
(Presentation script)

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I want to begin my talk on naturally occurring argument by looking at a specimen. It comes from a conversation that occurred during a meeting of parents and teachers who were invited to join the host in a discussion of schooling. The host asked each of the guests to introduce themselves and acknowledged each one. In the transcript below you can see what happened when one of the guests, Jane, introduced herself as principal of a school serving autistic children.

(Brackets shown overlapping speech.)

GUEST: Hi, I'm Jane Guest, and I'm a principal of a special-ed center in Virginia, um, serving children ages five through twenty-two um with autism and physical and medically fragile [conditions.

HOST: [How is that going?

GUEST: Well, [going well

HOST: [Have you seen a big increase in the autism, with the children, a big

GUEST: =Yes, yes. In fact, our school has shifted its population. So more children with autism, definitely.

HOST: So what's going on with autism, when you look at the tremendous increases, really, it's such an incredible -- it's a truly horrible thing to watch, the- the tremendous amount of increase. Do you have any idea? You, bu- And you're seeing it in the school?

GUEST: Yes, I think -- I mean, I think the statistics, I believe, are 1 in 66, 1 in 68 children um are diagnosed with autism.

HOST: And now it's going to be even lower [than that], which is just amazing.

GUEST: [Probably.]

HOST: Well, maybe we can do something.

Somehow, by the end of the conversation, we want to say that the host has been pretty positive about the tremendous increase in autism. But at first, he is just asking what Jane has observed, making no commitment. Her answer is equivocal. It isn't clear whether she is saying that her school is seeing more kids with autism because the condition itself is becoming more common, or that the school has more autistic kids now because they shifted their mission. But

the host seems to understand her as saying that she has seen autism increasing in the general population, and he next asks whether she has any idea why that is happening. Here, what he says clearly presupposes that autism is increasing—but he still isn't really asserting that. Jane hesitates before answering with statistics on what proportion of children in the US are diagnosed with autism. Jane no doubt knows that diagnoses of autism can rise even if there has been no change in how many children actually have the condition—for example, if diagnostic standards change or if public awareness rises. So again, Jane's response is equivocal, but the host takes it as confirming that she too believes that autism is really becoming more common.

So consider a few questions about what happened in this talk. Did someone in this conversation claim that autism is becoming more common? The host? The guest? Both? Neither? If someone did claim this, where did that occur? Certainly not in the host's initial question, and maybe not in his followup. And Jane—is she really in agreement or just being agreeable? Is she being noncommittal on purpose? Or is she just confused about what the host is getting at? If she doesn't agree with the idea that autism is becoming more common, why does she seem to go along with it?

By the time the host closes this exchange to move to the next guest, both seem to be on the record as believing that autism is becoming more common, whether or not we can say that either or both actually claimed that this is so.

This short exchange is from a very large collection of material—tens of thousands of items-- related to a controversy I have been studying, commonly known as the anti-vaccination controversy.[1] For several decades, stories have circulated about children developing symptoms of autism immediately after vaccination, especially after getting a combined vaccine for measles, mumps, and rubella. There have been tens of thousands of news stories and editorials alluding to this controversy, plus many hundreds of scientific papers relevant to it, plus political conversations about laws requiring parents to vaccinate their children, plus court cases of various kinds that have the link between vaccination and autism as a point of fact, and of course hundreds of thousands of mentions of all of these other things in social media posts. The idea that autism is becoming more common is widespread. But so is skepticism about whether this is true, and it is often claimed that the apparent increase in autism is simply an artifact of changing diagnostic standards. The related idea that vaccination can cause autism is strongly denied by most health scientists.

The exchange we've been looking at occurred at a relatively obscure meeting that normally would not have attracted any public notice. It gained publicity when fact-checkers at the Washington Post and the Associated Press called out the *belief* that autism is becoming more common as a *claim* made by the host: Donald Trump, President of the United States.[2] Both organizations pointed out that Trump the candidate had reported firsthand knowledge of a child who became autistic after vaccination. Both fact-checked Trump on the claim attributed to him from the meeting, and their fact-checking was consumed and recycled by countless other news organizations. But neither of the fact-checkers actually seems to have been interested in the claim itself, since as I've said, the idea that autism is increasing very rapidly has

been circulated for decades. The two news organizations were interested in the fact that *Trump* made the claim because that is relevant to a standing concern *they* have, for holding politicians and government officials accountable to the truth. The Post slammed him with 3 pinocchios—meaning that Trump *lied* about autism becoming more common, but not so egregiously as to earn the full four pinocchios he so often receives. The Associated Press was willing to accept that Trump actually believed what he said, but faulted him for having an opinion without enough knowledge of the relevant science.

If the fact-checkers had not called attention to Trump's "listening session" with teachers and parents, few people would have paid any attention to it at all. But the Post claimed that Trump lied, and the Associated Press claimed that Trump is uninformed, opening space for disagreements with these claims. In the few days after these fact-checking stories appeared, there were spikes in Twitter and Facebook traffic associated with autism, as well as spikes in news coverage. So the conversation between Trump and his guest is entangled not just with the controversy over childhood vaccination, but also, quite incidentally, with the question of whether Trump is a fit president. And what the fact-checkers do to serve their own agendas filters back out into the ongoing controversy over whether autism is or is not becoming more common, stimulating more conversation about the topic in both conventional media and social media.

This is naturally occurring argumentation—all of what I've just described. The conversation between Trump and Jane, but also its allusions to other prior discourse, its uptake by journalistic fact-checkers, and the rippling of content out into other contexts where it can be re-purposed over and over. When we try to draw analytic boundaries around naturally occurring argument, we should not suppose that the phenomena themselves will stay within those boundaries. Naturally occurring argument is very messy. It is often deeply defective, and its only corrective is more argumentation. When we critique it, we become part of it. Although analysts, including fact-checkers, may see themselves as outside the argument looking in, even the attribution of a claim and a reason to any participant is itself an argumentative move, one that can also be disputed. Donald Trump in fact often denies that he has claimed whatever

people reconstruct from what he actually said or tweeted. Paradoxically, some of the activity stimulated by fact-checking Trump on autism was aimed at stirring people up to sign a change.org petition urging President Trump to take a set of actions to end the autism epidemic that the fact-checkers claimed is no epidemic at all. Naturally occurring argument can expand in multiple directions at once, and every expansion can give rise to other expansions, and these to still others, with no obvious progress toward any sort of resolution.

At its best, argumentation involves searching out and evaluating whatever might improve the basis for our beliefs and our actions, not only as individual minds but also as societies. But argumentation at its worst is also extremely interesting and even more worth studying. When we look at very large bodies of discourse, we see over and over that people adhere to beliefs with the flimsiest evidence. But we also see that they can be surprisingly adept at detecting flimsiness when motivated to look for it. In naturally occurring argument, participants' interest in truth is often highly opportunistic, in that they care relatively little about mistakes and misstatements unless those mistakes and misstatements can be called out to advantage. But this sort of opportunism does not mean that people are satisfied with themselves. On the contrary, we are constantly on the lookout for ways to improve our reasoning and arguing. Looking at argument as it occurs naturally involves looking at the full range of things people do when *arguing* and also noticing the ways in which the practice itself changes over time.

For me and my close collaborators, the argumentative moves actual people make in actual interaction are our objects of study, the phenomena we want to understand. Paying close attention to the details of naturally occurring argument is our most central methodological commitment. And the problems we choose to study are ones that actually matter in naturally occurring argument. I plan to talk first about the methodological importance of paying attention to naturally occurring argument, and then, briefly, about naturally occurring argument as a human activity riddled with unsolved problems in need of sustained theoretical attention.

Naturally occurring argument as a methodological commitment

A methodological commitment to naturally occurring argument is a commitment to describing what people actually do when they argue. Naturally occurring argument includes not only arguments within spontaneous conversational interaction, but also arguments presented in any medium and any context. Naturally occurring argument has a context, a purpose, and a set of participants. It can be observed directly, and it can be preserved in print or other media for further review.

Wherever argument occurs, it can teach us something about its own character and its own natural normative organization. When we take naturally occurring argument as our object of study, every context in which argument occurs is a legitimate source of data. I began my own career as a researcher studying arguments occurring in ordinary conversation and I am ending it studying decades-long public health controversies where the stakes are high enough to motivate huge societal investment in getting to the right conclusion. Looking at naturally

occurring argument is important methodologically, because it can overturn even our most closely held assumptions about argumentation's nature, its function, and even its normative standards. My colleagues and I have adopted this methodological stance because it forces us to see and consider things we would never otherwise have imagined.

The central research activities associated with this methodological commitment are (1) collecting many cases of argument and (2) studying them as closely as possible. Scott Jacobs and I began working on naturally occurring argument in the late 1970s, choosing ordinary interpersonal conversation as an initial context for our studies (Jackson & Jacobs 1980; Jacobs & Jackson 1982, 1989). We had become acquainted with a new project in sociology known as conversation analysis. The ambition of conversation analysis in sociology was to construct a theoretical account of social order from processes observable in ordinary, mundane human interaction. One of the earliest and most widely cited achievements of the sociological conversation analysts was a study of conversational turn-taking by Sacks, Schegloff, and Jefferson (1974). This early study involved close examination of detailed transcriptions of recorded conversations, from which the authors attempted to abstract a system that participants in conversation use to organize the transitions from one speaker to another. Scott and I adopted the transcribing methods and the general approach of the conversation analysts to try to find the devices by which participants initiate, elaborate, and conclude argumentative exchanges. We thought it possible that a general theory of argumentation could be grounded in this most basic and least contrived form of communication.

Here's a specimen from our early work (Jacobs & Jackson 1982), a segment from a conversation recorded and transcribed by one of Scott's students. Transcribing methods have improved over time, but you can see the kind of detail that went into this kind of work, including special devices like colons to indicate that a speaker has stretched a sound (as in Mar::y::).

C and K are two young women friends.
C: Why did he change from Catholic to *Lutheran*, they're *total* opposites.
K: No they're not, they're kind of the same.
C: *No they aren't* [pause] I'm a *Lutheran*.
K: I'm a *Catholic*. [pause] What's going on there [pause]. I think they're kind of the same. [pause] That's cute. Un, they're both pretty close, really Chris.
C: I don't think so.
K: They both have ritual. [pause] Their views are pretty mu- I went to a Lutheran service one time. Well there- there's differences bu-
C: Well Lutherans don't believe- in- *Mar::y::* you know, like you guys do.

Building argumentation theory inductively from this kind of dialogue is different from applying a pre-existing theoretical construct to the dialogue. Either approach is possible, and both can be valuable. If an informal logician should ever consider this conversation worth analyzing, attention would likely be drawn in directions different from ours. Analytic tasks for informal logic include parsing the talk into claims and reasons, identifying what kind of argument is being made, and offering some appraisal of the argument. So we might take all of C's turns and

reconstruct them as a series of propositions and relationships among them, adding conjectures as to how things that seem to be meant as reasons might be connected to the claim. And we can do the same to reconstruct K's side of the argument.

C's side:

Claim: Catholic and Lutheran are total opposites.
Reason 1: I'm Lutheran. [Position to know]
Reason 2: Lutherans don't believe in Mary and Catholics do. [Example of opposition]

K's side:

Claim: Catholic and Lutheran are kind of the same.
Reason 1: I'm Catholic & I went to a Lutheran service one time. [Position to know]
Reason 2: They both have ritual. [Example of sameness]

There are plenty of other ways to represent the content of this little exchange. A pragma-dialectical approach would see each person as having two independent lines of defense for her claim, and might also note that the dispute itself involves not just one standpoint that is advanced by one participant and challenged by the other, but two different standpoints, each with its own supporting argumentation.

Scott and I took our analysis in a different direction, by not taking for granted that an argument starts with a claim in need of defense, nor with any set of prior agreements. In this case and many others, we were struck by the fact that neither participant *set out* to prove a claim to the other, but stumbled into argument when they encountered trouble. C said something not expecting that K might disagree, or even actually take offense. At a minimum, C exposed a belief that K did not share (about Catholic and Lutheran faiths). She may also have communicated some negativity toward Catholics (by making clear that, as a Lutheran, she could not imagine converting to Catholicism). In any case, K disagreed, and both found themselves needing to defend their viewpoints.

There are things to notice here that are not retained in the kinds of reconstructions that focus on claims and reasons. To get a sense of this, look at the fact that when C is challenged, she first just tries to assert her own credibility, and when K counters, C shifts to a different approach. It may be that C realized that neither of them held any experiential advantage, or it may be that C worried she might have offended K. Either way, there is no more elaboration on direct personal knowledge. Instead, C *begins* the search for a more promising defense of her claim by considering the ways in which the two religions are different. On K's side, something similar happens; when C shows some level of commitment to her claim, K begins her own search for ways in which they are the same. The specific propositional elements that get out into the discourse—the bits we pull out as claims and reasons--are a product of the way each participant elaborates, extends, and modifies a stance in response to another's disagreement. These bits of content may have very little to do with what actual grounds each person had for

belief going into the conversation. Both women have their own personal experience as grounds for their beliefs, but may never have really interrogated that experience in any detail. But both quickly see that neither can discount the other's experience while claiming their own experience as evidence. This argument may be the first occasion on which either of them have ever actually reflected on the claims they find themselves defending—that Catholic and Lutheran are complete opposites or that Catholic and Lutheran are kind of the same. We often know things without having any reflective awareness of how we know it, and we *develop* the support for what we believe when we have a reason to do that. The way Jacobs and I have put this in the past is to say that argument drills down from disagreement, searching for a path to resolution or some other way of managing the disagreement.

There are interesting features of this dialogue that I don't have time to discuss—why, for example, K seems to be trying to change the subject, and why the matter was dropped after this quick exchange of views. Instead, I want to give you a sense of what we learned by looking at many, many exchanges of this kind. Though uninteresting in themselves, conversational arguments exhibit several important properties that are inherited from conversational turn-taking. These properties were identified by Sacks, Schegloff and Jefferson as local management, participant administration, and interactional emergence. And I want to emphasize that these are very abstract properties, shared not only by conversational turn-taking and conversational argument, but by many other devices for coordinating human actions.

Local management, for the turn-taking system, means that the system generates one turn transition at a time (rather than pre-allocating turns of fixed length as in a formal debate). More generally, a locally managed system is one that deals with contingencies as they arise, rather than attempting to predefine the way events will unfold. For argumentation, local management means that participants make moment-by-moment choices on when and how to disagree, and further, they count on others to do so as well. So participants don't try to defend everything they say, or to make sure in advance that they can back up all of their assumptions, but instead go about their business assuming that disagreements can be handled as they arise. The way we put this long ago (Jackson & Jacobs 1980) was to describe argument as disagreement-relevant expansion of speech act exchanges.

Participant-administration means that any regulation that must be done is left to the participants themselves. They must enact and enforce the system of rules in their own conduct. Turn-taking breaks down if everyone speaks at once, but only the participants themselves can get back to an orderly alternation of speaking turns. Participant-administration in argument means that when anything goes wrong in an argument—for example, digressions that spin out of control—the participants themselves must put things right. If you think about special formats like third party dispute mediation, there can be participants whose only role is to try to keep things orderly, but this succeeds only with the cooperation of the people who are direct parties to the dispute. Even in this kind of format, the new configuration of participants all share the responsibility to use argument itself to regulate conduct within the exchange (Jacobs et al., 1989).

Interactional emergence means that the overall character of a conversation is not something planned by one participant or another, but something novel that results from how each person's line of action affects and is affected by the others. An overall pattern of conversational dominance, for example, is not predetermined, and is not a consequence of a single person's conduct, but something that emerges from how all participants behave at transition points. For argument, interactional emergence means that neither participant can unilaterally choose the direction for expansion of content. Everything a person says in conversation has a complicated disagreement space that other participants may choose to explore or ignore. At first, Scott and I thought that this disagreement space was structured by speech act conditions, but later on we realized that it is much less constrained than that, including not only speech act preconditions but also other presuppostions, implications, implicatures, and all sorts of other information given off in interaction. Quite often, a hearers' own standing concerns will lead them to pick up on issues that are simply not visible in what has actually been said by the other (Jacobs et al., 1991). Conversational argument occurs when someone begins exploring any part of the disagreement space associated with anything another has said or otherwise communicated, and this is highly unpredictable.

So let me summarize what we believe about argumentation after taking seriously all kinds of cases of conversational argument—and later, argumentation in other formats. To begin with, argument is not a distinct type of speech act or a special activity type. It is a system for managing a certain kind of trouble that can occur unexpectedly anywhere in any kind of interaction. Virtually any contribution to any kind of exchange can trigger argument. When something is challenged, the buildout of a defense is always dependent on what actual objections are raised (not what objections could be raised in principle). When a weak defense is provided, as in the conversation between C and K, further objections may lead to an improved defense. In naturally occurring argument, a good argument is not defined by the internal relationships among one reasoner's premises and conclusions, but by responsiveness to specific disagreements between two or more perspectives. Because arguers engage in participant administration, we can recover not only structural features, but also normative considerations.

A methodological commitment to naturally occurring argument leads us to treat disagreement as central, and expansion around disagreement as the basic mechanism through which arguments of all kinds acquire their content. Somehow, a locally-managed, participant-administered system for the management of disagreement allows for the interactional emergence of what can, at some point, be recognized as a claim supported by a reason. With some elaboration, this characterization of conversational argument stands up fairly well as we shift to other forms of naturally occurring argument. So, even when we shift to highly technical debate, it is disagreement of some specific kind that guides the buildout of reasons for a disputed position.

I want to elaborate on this for the case of my current work, on the vaccination controversy, but first I want to just note that in this work the methodological commitment to naturally occurring argument plays out a little differently. To study a naturally occurring controversy of this size and complexity requires tools other than transcription and micro-analysis. Think about where

the argument occurs: in public records of various kinds, in news reports and opinion journalism, in scientific reports, in court records of litigation around vaccination injury, and of course in new kinds of conversation occurring on social media platforms. Although most active contributors to the controversy are aware of only a subset of all this material, the rise of digital media, open access, and algorithmic search means that it is accessible to anyone with enough motivation and ingenuity to find it. Making sense of the vast amount of discourse generated around this controversy requires new tools-- some people call them macroscopes (following Börner, 2011; see also Jackson, 2013)—for looking at large amounts of social data produced by large numbers of people over large spans of time. A macroscope is not a single tool, such as automated text analysis, but a combination of tools that acquire data, facilitate analysis at very large scale, and represent the data in some illuminating form. Macroscopes in other fields are designed to handle very large amounts of data and to produce a very high level views of phenomena. Ideally, an argumentation macroscope would help us to see, across long timespans, how the shape of a debate changes as particular issues are taken up and expanded-- how they are resolved or how they are abandoned. For example, tools that allow for capture and analysis of social media content can show us that after the fact-checking of Donald Trump's "claim" about tremendous increase in autism, there was a noticeable spike in twitter and facebook traffic (as in this screenshot from a tool called Crimson Hexagon; similar kinds of trends can be generated with other tools applied to more familiar databases such as PubMed for science and Lexis Nexis for news).
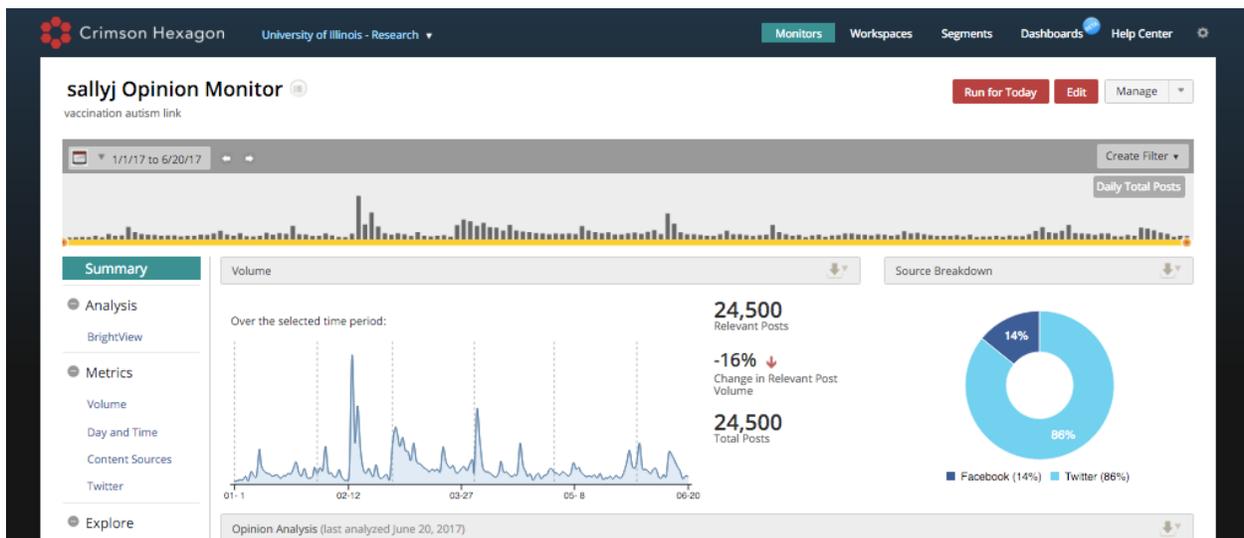
But even a macroscopic view of argument must also be capable of zooming in on interesting content like the conversation between Trump and Jane that provided the occasion for fact-checking and other discussion that followed. To deal with argument as it occurs naturally in the digital age, we need to operate at multiple social scales. We need to be able to shift viewpoint from individual texts and exchanges to huge bodies of previously generated content, and we need to be able to talk about reasoning both at an individual level and at the societal level. That's what I try to do with the vaccination controversy: to see the decades of discussion as a

whole, but to locate and look closely at specific moves that have made a difference to the controversy.

Part of what there is to discover in this particular controversy is how argument proceeds in a dramatically altered communication ecology—because the controversy started when the Internet was still an obscure tool for engineers running over telephone infrastructure, and steadily adjusted to the advent of online communities, the rise of the worldwide web, and the emergence of social media, in that order. I know that many people believe that social media are responsible for the anti-vaccination movement, but that is demonstrably false. On the other hand, the course of this particular controversy *was* altered by the rise of the new media in ways I don't have time to discuss today.[3]

The methodological commitment to naturally occurring argument pays off, in this controversy, with a wealth of data on an issue that will be more familiar to most people at this conference: argument involving expertise in some way. In this controversy and others I have studied in the past, people do things with experts' opinions and experts' work products that really don't look like forms of reasoning we feel we know so well. We have plenty of theory on how people decide whether to believe claims backed only by an expert's opinion, but we have very little theory, if any, on how ordinary people try to *change* experts' opinions. Does that asymmetry seem odd to you? Because to me, it seems odder and odder as I study the resourcefulness of non-experts attempting not only to evaluate expert opinion, and also to influence it. Here is a topic where a commitment to naturally occurring argument puts us on a path entirely different from the path we have been on since antiquity.

In naturally occurring argument, people do often face the problem of how heavily to weigh what experts think about a subject, and instructing them in better ways of doing this is certainly worthwhile. But there is no reason in principle why we should be more interested in how ordinary people make sense of the opinions of expert than in how experts make sense of the opinions of non-experts. We should be at least as interested in how experts themselves arrive at opinions that can be mentioned in an appeal to expert opinion; after all, when a classic appeal to expert opinion is not convincing, one way of expanding the argument, to make it more convincing, is to start excavating what it was that led the expert to have the opinion. We should be interested, too, in how non-experts participate in the shaping of expert opinion. All of these questions arise from what actually happens in significant controversies involving experts and their work products. We need to start *seeing* these phenomena and explore them as theoretical puzzles and practical problems.

At every social scale, argument expands around what the participants themselves regard as issues—as possible points of disagreement. Non-experts can choose not only whether to pay attention to experts or not, but also whether to engage with them directly. I want to show you another specimen, this one drawn from a scientific meeting convened by a government agency to create direct dialogue between health scientists and citizen activists. The transcript in this case was professionally prepared, along with all of the other presentations and extemporaneous remarks of the meeting participants.[4] The speaker is Mark Blaxill—a highly

committed autism activist who believes that the health science community is refusing to look at evidence of what he sees as an epidemic of autism.

I want to talk a little bit about the burden of proof on time trends. I would make the suggestion that given the increases that we have seen, the notion that the reported increases are an artifact is a hypothesis, and it is a testable hypothesis.

I'll just take California as an example, because there is a pretty good surveillance system there, better than other parts of the country. A child born in California in the early 1980s had less than a 5 in 10,000 chance of becoming autistic. By the late 1990s, that rate was closer to 40 for 10,000, so that is roughly a 10-fold increase in about 15 years.

The notion of that increase being artifactual has been tested in a lot of natural experiments. There is a hypothesis of diagnostic substitution that has been tested and falsified. There is the hypothesis of diagnostic expansion, that somehow we are changing the quality of the diagnoses.

The interesting thing about California is that the registry is for a full syndrome, it doesn't include the broader spectrum, so that theory of expansion doesn't hold. The M.I.N.D. Institute has done a quality control check across decades. There are problems with those kinds of studies, but they didn't uncover any different diagnostic quality in birth cohorts from the 1980s or the 1990s. And the surveillance system has been in place. It has changed, any administrative system changes, but it has been in place since the 1970s, unlike some of the educational records in the 1990s. So the notion of diagnostic expansion is not supported.

The only remaining hypothesis, or what I like to call the hidden horde hypothesis, that somehow hundreds if not thousands of children escaped the service systems, and if we looked for 25-year-old Californian young men and women with autism, we would find them in large numbers somewhere. That is an interesting hypothesis. I would suggest people ought to prove it before we start accepting the notion that the increases are artifactual.

So all you can say from that is that there is a lot of evidence that suggests that in California the increases are real. California, when you compare other databases to the rest of the country, they don't look that different, so again that is inductive reasoning, but you could argue that is a pretty useful database for the United States.

Then I would ask the question in terms of studies, I think we should pursue studies to clarify uncertainties, but I would urge us to consider changing the burden of proof. Rather than saying the burden of proof is to demonstrate that all this is real, I would say the burden of proof is to demonstrate that it is artifactual.

> If that is the case, we ought to think about changing our official narrative, because the expression of doubt about the increases creates the sense that we have a mystery and a puzzle, and no sense of urgency. The recognition of the reality changes the entire dynamic. I think a lot of us are saying we need to treat autism as an emergency, and that is what all the data points to.

There are some obvious things to see here, but also some subtle ones. Although "anti-vaxxers" are often said to reject science, Blaxill makes clear that he does not reject scientific expertise at all. He makes explicit that *only* scientific experts can answer certain kinds of questions, and that this very fact puts them under obligation to do so. He also shows a good deal of sophistication in understanding how scientists reason. He calls them on a dodgy argumentative move, an unjustified leap from noticing that an increase in autism diagnosis might be an artifact of changing diagnostic standards to asserting that there has been no actual increase. And he knows another really important thing about scientific opinion, that it does not form around all matters equally but around a set of matters that manage to get on a discipline's agenda—often through what a funding agency decides is worth funding. (Changing the agenda was part of the purpose of convening this meeting.)

The gist of Blaxill's objection is that only the scientific community has the expertise and institutional resources to find out whether autism is actually increasing, and that they have chosen instead *to leave the question unanswered*. He does not just decide whether to accept or reject expert opinion; he tries to get the experts to reconsider their opinion.

This is not a singular occurrence, by the way. I find something similar in other health controversies I have examined. In the 1980s, AIDS activist successfully challenged health scientists on whether causal reasoning really required the use of placebos in drug trials. In the 1990s, the George W. Bush administration challenged the health science community on what kinds of sex education programs were worth investigating, and although this challenge was not successful it did change the research agenda for a few years. There is an unmistakable institutional dimension to these controversies—a recognition that expertise is not just a matter of what beliefs experts hold but a matter of what work they choose to do, what questions they choose to tackle, what resources they have that the public does not have, and so on. These issues are actually raised with some frequency by intelligent non-experts, but they have escaped notice in our theoretical treatments of argument from expert opinion as well as in more pedagogically oriented work meant to train critical thinkers.

The basic reason Jacobs and I committed ourselves to study of naturally occurring argument is that it forces us to see and consider things we would never have imagined. No amount of theorizing can substitute for direct examination of many, many cases of actual argumentation. We can be as rigorous as we like in how we represent what goes on in naturally occurring argument, but first, we have to see what there is to represent. That is what a methodological commitment to naturally occurring argument entails. Careful observation is as important as rigorous theorizing, not only for describing argument but also for saying anything with normative or prescriptive force.

Naturally Occurring Argument as a Human Practice Riddled with Unsolved Problems

I want to shift now from the methodological commitment and talk briefly about the kinds of unexpected problems that can be found in naturally occurring argument. Perhaps the most important reason to commit ourselves to engagement with naturally occurring argument is that there are real problems there to be noticed and addressed. If we really pay attention to naturally occurring argument, we notice things we do not expect to see, including serious problems we do not know how to handle, problems that no one knows how to handle—at least not yet. Naturally occurring argument aims to manage disagreements in all kinds of human endeavors, and it has developed over time to handle more kinds of disagreements more effectively. But every new thing we learn how to do opens risk of new kinds of mistakes. A methodological commitment to naturally occurring argument goes hand-in-hand with a theoretical commitment to wrestle with the problems the practice itself presents. Our theories of argument need to keep pace with change in the object of study—with change in the actual practice of arguing.

Right now naturally occurring argument is evolving very rapidly, adapting to a rapidly changing communication environment. Naturally occurring argument, like all human communication, is sensitive to medium, and changes in communication technology can set off waves of change in how we argue and how we reason. I do not have time today to fully develop this idea but have tried to do so in some recent essays (Jackson 2015a; Jackson & Lambert 2016; Jackson & Schneider, 2016). There is existing scholarship on how reasoning and argumentation have adapted to earlier communication technologies: to the invention of writing and, later, to the invention of mechanical printing. We are only beginning to see what consequence global data networks and their computational components might have for the practice of argumentation.

One already-visible change in naturally occurring argument is that it has become infused with technical inventions and practical innovations, many of which are connected with the rise of computational thinking and information science. I do not mean that everyone in society has internalized technical forms of reasoning, nor that anyone does so in every case. But inventions and innovations in reasoning can reset our standards in such a way as to make once-respectable forms of argument obsolete. At the same time, any such invention can introduce real threats to reasonableness, in need of real solutions. The very changeability of argumentation is under-theorized at present, and the specific changes that have been occurring also need more notice.

Let me explain what I mean by inventions and innovations. I have in mind any of the many improvements expert fields make in how they develop the support for conclusions. A large subclass of these improvements have to do with inference—with figuring out what may reasonably be concluded given a body of data. Jodi Schneider and I are studying some of these invented improvements in inference—most particularly a form of aggregative reasoning known as a Cochrane Review. Humanity is at this very moment discovering other new possibilities for extracting conclusions from data, often with machine assistance. We are delegating more and

more reasoning tasks to machines, and after half a century of doing so, we are gaining confidence in the idea that algorithms can produce results superior to human judgment on a very wide range of perceptual and interpretive tasks. Legacy argumentation theory offers very little to guide our thinking about whether and under what conditions these developments will improve our overall capacity for reasonableness, nor on what threats may emerge.

One hopes that new technologies of the intellect (including artificial intelligence) will produce an improvement in our collective ability to reason, but it is also possible—in fact probable— that accompanying any gain will be an array of other consequences that are neither intended nor desired. Some of these are short-term problems of adjustment to a new set of possibilities. Fake news takes hold because there are still many people living who grew up believing that things in print generally had authority behind them. We will eventually adjust to this and solve it somehow. Other negative consequences represent permanent costs associated with choosing one technical direction over another—for example, a choice to invest in building expert fields that are no longer intelligible to non-experts. We may or may not be able to find design solutions for negative consequences of our choices, and the negatives that remain may or may not be offset by permanent benefits. We don't know any of that yet, and we can't just assume that evolution is the same as improvement. But investigation of naturally occurring argument is becoming more important than ever before, because we need to be looking at what is new. Argumentation theory that is anchored in naturally occurring argument will be permeable enough to recognize new problems that don't look like old problems. If new problems are indeed emerging, argumentation theory will need new concepts and methods to shed light on these new problems. When we remain methodologically committed to examination of naturally occurring argument, these novel problems smack us right between the eyes.

To illustrate, I will draw from conversations a small group of us had on Monday, before the conference opened. Dima Mohammed and I convened this group to consider what argumentation theory might contribute to understanding a very troubling turn in public discourse—a kind of contempt for facts or for those claiming to argue from fact. Notice how entangled this is with issues of expertise: What people interpret as a contempt for fact is often actually a suspicion of elites speaking for fact-finding institutions. We need to understand this troubling new turn: to describe it in detail, to ask with as much objectivity as possible whether there is something wrong with our legacy ideas about fact. We need to imagine, if possible, ways to intervene constructively, and to anticipate that well-intentioned interventions like fact-checking can go wrong.

Fact-finding institutions are key participants in contemporary argumentation, but they are virtually invisible in our theorizing. We need to look very deeply into when it is rational to invest our trust in fact-finding institutions or enterprises that claim to be devoted to fact-finding. Not every such enterprise *should* be trusted. And even those that should be trusted often need some form of pushback from outside to keep them aware of the importance of preserving trust. The trustworthiness of these enterprises is a key line of critical questioning in arguments involving scientific fact, and it does no good to lump all such questioning together as denialism. The trust we choose to invest in fact-finding institutions is rationally dependent on our ability to

hold them accountable (Jackson 2012, 2015b). Accountability involves accepting an obligation to answer questions and challenges raised against one's conduct and conclusions. Among many other pressing problems, argumentation theory should be working on how to support a healthy balance of trust and skepticism toward fact-finding enterprises and fact-finding institutions.

Conclusion

People have been thinking about argument for millennia, no doubt closely observing its practice in their own time. Much of what has been discovered about argument, much of what has been invented in the past, still makes perfect sense. Some does not. Because how we argue is changing. How we arrive at conclusions is changing, and how we defend these conclusions against criticism is also changing. We humans are making new kinds of mistakes in our reasoning as we invent new reasoning tools and try them out, and if our field has an interest in improvement of reasoning and argument, we have an obligation to notice both the advances that are being made and any new pitfalls we encounter.

A commitment to naturally occurring argument is important methodologically because it allows us to see what we do not expect to see, including the very fact that people are busily inventing new forms of reasoning that become new standards for argumentation. Unless we study argumentation as it actually occurs, we will miss all of this.

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[1] Some preliminary findings are discussed in Jackson (2015b), Jackson & Lambert (2016), and Jackson & Schneider (2016).

[2] The official transcript of the meeting is available at https://www.whitehouse.gov/the-press-office/2017/02/14/remarks-president-trump-parent-teacher-conference-listening-session. The transcription as shown was hand-corrected by Jackson, from a videotape of the session retrieved from https://www.youtube.com/watch?v=E750VfyTj4g. Fact-checking was done by *The Washington Post*, Feb. 16, 2017, https://www.washingtonpost.com/news/fact-checker/wp/2017/02/16/trumps-claim-that-theres-tremendous-amount-of-increase-in-autism-cases/?utm_term=.b781d7f1c5c2 (byline Michelle Ye Hee Lee) and by the Associated Press, Feb. 15, 2017, https://apnews.com/c7d4da746a444f13b22c5f89d8fe60a8/ap-fact-check-trumps-iffy-grasp-autism-research (byine Lauran Neergaard & Calvin Woodward).

[3] Most obviously, the open content movement that emerged with the worldwide web has given ordinary citizens much greater access to primary scientific literature, providing different opportunities for engaging with experts but also different ways of erring in both reasoning and arguing about health.

[4] Remarks made at a National Academy of Science Workshop, "Autism and the Environment: Challenges and Opportunities for Research," held Apr. 18-19, 2007, in Washington DC. Edited proceedings of the workshop have been published and are available at http://www.nap.edu/catalog/11946.html.