

RESEARCH ARTICLE

A Typology of Reasoning in Deliberative Processes: A Study of the 2010 Oregon Citizens' Initiative Review

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Deliberative democracy processes encourage people to engage in thoughtful analysis and well-reasoned discussion about a public issue. Though scholarship examining deliberative forums has expanded greatly in recent years, there is still much to learn about information processing in deliberation – more specifically, how citizens express different forms of reasoning, and how they voice disagreement with their fellow participants. To more closely examine these two areas, we conducted a qualitative thematic analysis of transcripts from a notable deliberative forum, the Citizens' Initiative Review (CIR), with a focus on the 2010 Oregon CIR forum on medical marijuana legalization. We used this analysis to develop a typology of different forms of reasoning expressed in deliberation: inductive, deductive, causal, analogical, expressing uncertainty, and questioning. In addition, we identified four primary forms of voicing disagreement in deliberation: questioning, repackaging, agreeing-to-disagree, and discrediting others. We conclude by exploring the implications of this analysis for deliberation scholarship and practice, and suggesting future areas of research that could further explore reasoning and disagreement in deliberative democracy.

Keywords: deliberative analysis; political psychology; deliberative mini-publics; political disagreement; Deliberative reasoning

Citizens, public officials, democratic reformers, and scholars are increasingly experimenting with deliberative processes to get people involved in public discussion and decision-making in meaningful ways (Gastil 2008; Leighninger 2012). Public deliberation scholars have examined the deliberative qualities (Knobloch et al. 2013) and broader electoral impacts (Gastil et al. 2018), yet there is still much to learn about the communicative processes occurring when citizens engage in public forums. Deliberative democratic processes encourage open and respectful discussion from a wide range of participants, and promote careful analysis of problems, trade-offs, and solutions (Burkhalter et al. 2002). Given the focus on reasoning and analysis in deliberative settings, we ask: How do citizens express this reasoning to their fellow deliberants, and how do they voice disagreement with each other when their reasoning differs?

To answer these questions, we examine the communication occurring in a notable deliberative forum, the Citizens' Initiative Review (CIR), which empanels a small group of citizens and tasks them with analyzing a

ballot measure faced in their community (Knobloch et al. 2013). Ballot measures provide a challenge for people trying to decide how to vote (Bowler & Donovan 1998)—many citizens are not well-versed in the details of policy questions and may struggle to connect their views and political values to their vote choice on an initiative. The CIR is aimed at helping voters better understand ballot measures. In the CIR process, a representative group of about two dozen randomly selected citizens gather for several days to engage in moderated discussion on a ballot measure, hear from Pro and Con advocates and neutral experts, and conduct an analysis of the measure before sharing their summarized findings (and in some cases an endorsement) with the general public (Gastil et al. 2014; Knobloch et al. 2013).

Though deliberative processes have been studied extensively there is still much to learn about the communication that occurs in such real-world deliberative innovations. Scholars have previously examined how well the CIR process lives up to the ideals of deliberative democracy (Knobloch et al. 2013) and how the CIR citizens' statement may influence the general public as people decide how to vote on ballot measures (Gastil et al. 2014). Others have offered descriptive accounts of public gatherings (Gastil & Kelshaw 2007), analyzed the forms of language and evidence that are found in deliberative meetings (Black 2009, Roberts et al. 2020), or set out to quantify the democratic and deliberative quality of these

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kinds of public decision-making processes (Steenbergen et al. 2003; Steffensmeier & Schenck-Hamlin 2008). One recent study (Adams 2014) examined reason-giving by citizens participating in National Issues Forum deliberations, shedding light on the process of argument construction among deliberators in a one- to two-hour gathering focused on big-picture questions related to a public issue.

Listening should be considered a crucial part of such deliberations. An analysis of community discussions about a proposed coal project in Australia produced four different categories of listening: 1) enclave listening between like-minded citizens; 2) alliance listening across different enclaves; 3) adversarial listening between citizens on opposing sides of the debate to monitor opponents; and 4) transformative listening where citizens listen selectively to others with the intent of changing views (Hendriks et al. 2019). The researchers concluded that in an era of polarization the first category is 'connective' while the other three are strategic to preparing an argument against one's opponent. A forum structured like the CIR helps avoid bias taking over such discussions. But when the reasoning is really in the form of a biased and emotional argument there is no true deliberation.

However, deliberants' communicative behavior may differ in a process like the CIR, which focuses on information and arguments around a specific policy question, includes a trained moderator to ensure a fair process, and lasts for several days. In addition, the CIR is one of the largest-scale deliberative innovations in current use, having become a permanent fixture in Oregon and Massachusetts and tested in several other states and localities around the US. The information and arguments advanced by the citizen panels also seem to affect voter behavior in state elections (Gastil et al. 2018; Gastil et al. 2014).

In this project, we examine the deliberative process in the 2010 Oregon CIR covering Measure 74, a medical marijuana legalization initiative, through a qualitative analysis of transcripts from the event. We study the kinds of reasoning voiced by CIR participants and witnesses during a key portion of the CIR process, and propose a typology of reasoning used by those taking part in citizen deliberative processes, like the CIR. We also examine the ways deliberants express disagreement when they differ in their reasoning, and propose a typology of forms of disagreement expression. We conclude by considering the implications of our findings for deliberative practice and scholarship, including potential applications of these typologies for future analyses of deliberation and evaluations of deliberative quality.

Deliberative Discussion and Argument

The primary goal of the CIR process is to publicly share the deliberators' findings via key claims and arguments related to the initiative to help voters reach informed decisions on the ballot measure (Gastil et al. 2014). Goodnight (2012) contends that argument in public deliberations couple appropriate forms of reasoning and

evidence to match the messages to ones' peers. Though expert evidence is important in deliberation (Roberts et al. 2020), so too is private and personal meaning and understanding. Thus, despite the extensive expert testimony, it is likely CIR participants use as much personal evidence and reasoning as they do technical or objective evidence in their decision-making (Fisher 1984; Jacobs & Jackson 1981).

Scholars have designed practical parameters to give deliberation an executable framework; though these frameworks vary, they are generally based on fair and open discussion of public issues, with an eye toward making a decision that reflects that discussion (Burkhalter, Gastil, & Kelshaw 2002; Carcasson & Sprain 2016). Another framework (Fishkin & Luskin 2005) suggests a similar set of criteria: factual arguments that are balanced and from multiple sides; discussants talking and listening with civility; arguments that are substantive and accepted only on merit and not on style or communicator identity; and the airing of all opinions held by a substantive part of the population to make the deliberations comprehensive.

Scholarship on argumentation illuminated how people engaging in contentious discussion advance arguments, make empirical claims, and support those claims (e.g. Van Eemeren & Grootendorst 2004). In their study on pragmatic argumentation, Jacobs and Jackson (1992) theorized that arguments are interactions meant to manage disagreement. Their conversation analysis work diverged from earlier approaches that treated arguments as units of evidence to support a specific speaker's position. Jacobs and Jackson contend that the truth value of a conclusion is separate from the pragmatic attempt to resolve a disagreement. Attempting 'to win' an argument can lead to derailing an attempt to resolve or manage disagreement, which is an important component of deliberation (Van Eemeren & Houtlosser 1999).

Deliberative forums, like the CIR, have made use of discussion ground rules and moderators to protect against such problems (Knobloch et al. 2013), and often rely on expert witnesses to provide a strong base of information for the participants (Roberts et al. 2020). To measure the effectiveness of different deliberation processes, Steffensmeier and Schenck-Hamlin (2008) compared how well three different kinds of deliberative bodies—public hearings, issue forums, and online message boards—did in producing quality arguments. They found that venues varied in their deliberative quality, but in general the public hearings and issue forums produced vibrant public argument and managed disagreement civilly. Deliberative processes and groups voicing disagreement also seem to be helpful in producing collective arguments that can overcome the cognitive biases to which citizens often fall prey (Collingwood & Reedy 2012; Himmelroos & Christensen 2020; Mercier & Landemore 2012).

Still, few studies have involved systematic investigation at the level of messages exchanged between deliberants (Stromer-Galley & Muhlberger 2009). Black (2012) contends that a common form of expression during deliberation is providing personal stories and examples,

reinforcing other findings on the prominence of storytelling in deliberative talk (Stromer-Galley & Muhlberger 2009; Ryfe 2006). In addition, participants have also been found to state opinions, cite sources, tell stories, disagree, ask questions, and explore key values in the deliberation process.

One notable study of the kinds of talk within deliberation is Stromer-Galley's (2007) content analysis focusing on idea expression during discussion, which revealed broad categories of problem-related, metatalk, process, and social talk. This analysis of problem discussion exposed some kinds of evidence participants used: 'opinions, agreements, disagreements, facts, and questions to deal with the problems they were discussing' (p. 22). This coding scheme reveals how participants express themselves during deliberation; by far, opinions were the most common (55% of utterances). Stromer-Galley also examined the sources cited in making claims, finding that personal anecdotes were the most common source (33.5%), followed by a researcher-provided briefing document (20.3%), other participants (6.5%), and mass media (3.0%). Our study seeks to extend this thread of research beyond forms of evidence to explore the kinds of reasoning participants express during deliberative processes.

Adams (2014) examined conversation dynamics of eight National Issues Forums to learn more about how citizens give reasons to support their position on an issue. He found that participants are more likely to give concrete, reasoned arguments with evidence that could lead to conclusions while deliberating with those whose point of view differed from their own. When talking with a group with a similar opinion a speaker is less motivated to formulate an organized and thoughtful position. Adams contends the crucial deliberative point is linking reasoning through evidence to potential conclusions or solutions. The deliberator uses statements called 'warrants' to establish authority or rules using the evidence to support their reasoning (Toulmin 2003). More recently, Niemeyer (2019) has advanced a theory for a general process of political reasoning in deliberative gatherings, helping explicate how citizens' values, beliefs, and opinions are integrated into reasoning to help a group arrive at a final decision. In this paper, we build on and complement this scholarship to find specific categories of reasoning as issues are deliberated, hopefully providing a typology of reasoning that could be useful for future analyses of deliberation. Thus, we pose the following research question:

RQ1: What type of reasoning was used by panelists to construct arguments for or against Measure 74?

Disagreement in Deliberation

When participants disagree, a skilled moderator can solicit additional information and elaboration from both participants and expert panelists to achieve a productive discourse. Scholars have long argued that discussion and disagreement are crucial to developing sound, democratic

public opinion. Studies have shown 'a positive association between exposure to disagreement and respondents' ability to generate reasons why others might disagree with them' (Price et al. 2002: 108). Black (2012) concludes that disagreement is subtle, if not polite, in deliberative forums but serves as a point of change in attitudes, ideas, and beliefs of participants (see also Himmelroos & Christensen 2020).

In the controlled CIR setting, disagreements are less likely to derail deliberation thanks to the presence of trained moderators. The planners of the CIR try to avoid hasty decision-making and other problems through the use of these facilitators. Moderators help encourage participants to deliberate critically (Gastil 2008). Perrin (2005) contends that context is very important in determining deliberative processes and outcomes. The context of the CIR brings together a relatively representative sample from across Oregon and the various backgrounds, biases, and opinions of deliberators must be resolved in order for participants to come up with an articulated message for the CIR citizens' statement. Past research has coded instances of disagreement (i.e. Stromer-Galley & Muhlberger 2009) and the reasons for disagreement (i.e. Price et al. 2002), as well as the potential effects of disagreement in deliberation (Himmelroos & Christensen 2020). However, less attention has been given to how deliberators *express* disagreement. Following research on the benefits of disagreement, and this gap in research on how communication unfolds in deliberative processes (Stromer-Galley & Muhlberger 2009), we pose the following research question:

RQ2: In the moderated discussion of the CIR, how do participants respond when they disagree with others' reasoning?

Method

In 2010, the state of Oregon conducted a CIR focused on Measure 74, a proposition on the legalization of medical marijuana (Gastil et al. 2014). This CIR panel was studied extensively by experts in deliberation through direct observation of the plenary and small group discussions, surveys of the participants during and after the process, and holistic evaluation of the process from a deliberation perspective (Knobloch et al. 2013). The results of this prior analysis found that this 2010 CIR panel met a high standard for a robust deliberative forum, and led to Oregon making CIR panels a permanent institution (Knobloch et al. 2013).

The goal of the CIR is to produce a citizens' statement, a single-page report produced by the citizen panel, which both educates and reflects key information relevant to voting on the propositions. The statement was released to the public at the conclusion of the CIR process, and was also published in the statewide voter pamphlet sent to each household in Oregon ahead of the Fall election. In addition, state and local news media outlets often cover the CIR and the final outcome of the panel's deliberation. This media coverage helps spread the CIR citizens' statement to a wider audience (Gastil et al. 2014).

Procedures

This paper analyzes the deliberative dialogue generated during the Day 3 and Day 4 discussions on Measure 74 by the Oregon CIR. These days were chosen because their agendas provided a variety of interactions between participants, experts, and moderators relative to other days of the CIR process (see, for example, Knobloch et al. 2013). The transcripts of Day 3 and Day 4 include text from the 24 citizen participants, moderators, expert witnesses, and a single outside advocate each for the Con and Pro positions. The Day 3 agenda included: 1) an opening 'self-disclosure' activity, 2) testimony from expert witnesses from law enforcement, state legislatures, and healthcare, 3) break-out sessions to brainstorm issues, and 4) a return to large group discussion to outline major concerns remaining at the end of the day. The Day 4 agenda included: 1) opening remarks from a moderator, 2) testimony from two law enforcement officials, 3) a Skype-call summation on the con position by a district attorney followed by a question and answer session, 4) an in-person summation on the Pro position by a medical marijuana legalization advocate followed by a question and answer session, 5) reports from various subgroups of the citizen participants about the potential text of the citizens' statement, and 6) deliberation and voting on the text for the citizens' statement. Deliberation centered on expert testimony as well as integrating positions generated in subgroups.

The presentations and discussions of both days were highly structured with the moderator keeping the advocates and participants on time. In this deliberative forum, the participants were allowed to express their opinion at any time as long as they stayed within the confines of the specific subject under consideration by the group at the time. Day 3 involved increased evidence from experts, challenges to evidence through participant questions, and deliberative evaluation of claim made by experts and fellow participants. The work of Day 4 focused on distilling key points for the text of the Pro and Con positions in the voters' pamphlet.

Data Set

Complete transcripts of the 2010 Oregon Citizen Initiative Review on Measure 74 were obtained from a research team that had previously studied the CIR process. The Day 3 deliberation was transcribed as 189 pages of double-spaced verbatim dialogue. Day 4 of the CIR proceedings was 225 pages of double-spaced verbatim dialogue. The transcripts generally identify speakers as one of the two CIR moderators, a specific individual who was either an expert witness or advocate for the Pro or Con sides, or a CIR citizen panel participant (excerpts included below use pseudonyms in place of names).

Data Analysis

Data analysis for RQ1 and RQ2 was conducted by utilizing a modified constant comparison method (Lindlof & Taylor 2011). This method allowed for analysis of the complex CIR transcripts of dialogue exchanged between participants. The goal of constant comparative method is to progress

logically through a series of coding steps in order to better understand the phenomena (Charmaz 2008). Throughout this process, observations were noted on the types of reasoning used by the CIR panelists in their deliberations and how they expressed disagreement about the reasoning (Lindlof & Taylor 2011). Following Heath and Cowley's (2004) recommendation, we examined the data, reasoned inductively, verified the data, and repeated the process by 'induction via ongoing data comparison' (p. 145). Through the comparison of each successive code to each prior code, the research team created a comprehensive set of categories capable of classifying reasoning and disagreement expressed by CIR participants.

Data reduction, initial coding, and axial coding

Given the large amount of data, analysis began with data reduction. The process started with a thorough read-through of the transcripts from Days 3 and 4. Then during a second-read through, data was coded for recurring themes with each code iteratively compared to past codes. After the data reduction, initial codes were assigned to portions of the data that involved types of reasoning used by the participants in deliberation (RQ1), then initial codes were assigned for how participants express disagreement about reasoning (RQ2). Initial codes were then grouped into categories describing types of reasoning, including personal examples and experiences, hypothetical examples, authoritative texts, statistics, expertise, causal, analogical, and expressing uncertainty. Initial categories for how participants express disagreement about reasoning included questioning, reframing, minimizing problems, semantic distinctions, vagueness, agree to disagree and discrediting others. These categories were later combined with similar codes into larger categories. The initial categories were combined based on similarities, and at times hierarchical differences. The typology (listed below) is detailed in **Table 1** for RQ1 and **Table 2** for RQ2:

Coding

From Table 1: Reasoning

- Inductive
 - Personal Examples or Experiences, Hypothetical Examples
- Deductive
 - Authoritative texts, Statistics, Expert Knowledge
- Causal
- Analogical
- Expressing Uncertainty
- Questioning

From Table 2: Expressing Disagreement

- Questioning
- Repackaging
 - Reframing, Minimizing problems, Semantic distinctions, Vagueness
- Agree to Disagree
- Discredit others

Table 1: Forms of reasoning.

Reasoning (RQ1)	
<i>Axial Codes</i>	<i>Example</i>
Inductive	
· <i>Personal Examples or Experience</i>	'I went to a city council meeting in Salem where two card holders had been robbed.'
· <i>Hypothetical Examples</i>	'Other people may feel very uncomfortable entering into that kind of agreement [signing up for a medical card].'
Deductive	
· <i>Authoritative texts</i>	'If he's a principal part of the state of Oregon, which he is, and he sees a criminal activity in his presence, he's required by law to report it. I know that specific law. That's a very specific law. I'm very familiar with that law.'
· <i>Statistics</i>	'We currently in Oregon have a 3.5% crime rate, and if you added up the 40,000 patients, the 28,000 growers, and the 20,000 caregivers that currently exist, almost 90,000 cardholders currently in the system, that would mean that we would have to have 3,000 criminals. And I can tell you for a fact that, in 2009, there were only eight convictions in Washington County, and I can go on record with a lot of other statistics that reinforce that fact.'
· <i>Expert Knowledge</i>	'The main points that I gathered first for Doctor Berry-- the main point she hit on continually is that with increased availability, experimentation and addiction occurs. So, that's what she kept saying. We don't know if it's true or not, but that's what I heard.'
Causal	'The withdrawal to marijuana in the human is not as dramatic as withdrawal from alcohol, which can lead to seizures and death -- or withdrawal from heroin, which leads to vomiting and gooseflesh and a runny nose.'
Analogical	'Let me use an analogy. If -- again, if we're talking about medicine and the regulation of medicine in dispensaries, if I'm prosecuting somebody for forging a drug prescription, the -- there's no exemption, for example, from a pharmacist, for their handling it. If they're in possession, let's say if the pharmacist decides that they're going to take 20 Oxycontin home, they can't do that, it's against federal law. Period.'
Expressing Uncertainty	'Yeah, when people came up with this as a statement, it might not have been specified, so maybe, we as a group don't know what we're talking about.'
Questioning	'And so, in addition, my actual question is, with the marijuana being so free and accessible, wouldn't you, as a Police Officer, former, I'm not exactly sure if you're still a Police Officer, wouldn't you consider -- I mean, when you're talking about the Mexican drug cartels and that, they are targeting our youth. And so, wouldn't you consider this being more accessible for our youth, and that it would actually end up costing the State more, and this Measure would actually not do -- it's going to have more bad effects for the State than it would what it's anticipated to do.'

The resulting typology thus accounts for relationships between and among each category uncovered. Throughout, the researchers met and compared independent coding to lift the data to a conceptual level revealing patterns, collapsing redundant and subordinate codes, and eliminating duplication.

Validation

This analysis was subjected to both peer analysis and negative case analysis. Creswell (2007) describes peer analysis as a chance to check with peers during coding. For this analysis, the two analysts categorized responses independently then asked each other questions about their own interpretation and the meaning of each respective code in the data. Negative case analysis is when 'the researcher refines working hypotheses as the inquiry advances in light of negative or disconfirming evidence' (Creswell 2007: 208). The researchers refined RQ2 through case examples in order to account for all cases categorically. This yielded a comprehensive categorization for participant and expert disagreement about reasoning.

Findings

Both experts and CIR participants used a variety of reasoning in making claims about the implications of the proposed law. The analysis reveals a typology to categorize types of reasoning used by participants in deliberation (RQ1) and how participants expressed disagreement about reasoning (RQ2). The following sections detail the six types of reasoning used by participants and the four ways in which participants disagreed with one another. One overlapping category, questioning, is shared as both a type of reasoning and a form of expressing disagreement. **Table 1** provides a summary of the types of reasoning. **Table 2** provides a summary of disagreement expression.

RQ1: Types of Reasoning in Deliberation

Inductive: From specific to general conclusions

Participants deliberated with experts and with each other. Participants used personal examples, experiences, and hypothetical examples to inductively make a point. Participants often told stories as a form of reasoning (Black 2009; Ryfe 2006). These forms of inductive reasoning

are attempts to relate a specific example to general conclusions.

One participant, Alyssa, reasoned that she knew something about the process of growing marijuana when she related to others' 'I don't grow either, but I know a lot of growers.' Personal experience and stories were not just used by panelists. Experts often called on their own personal experiences to make a point. For example, a researcher for the National Conference of State Legislators who lived in Colorado used personal examples from her own neighborhood to help respond to questions from CIR panelists (e.g. 'Living in Colorado, I can personally attest to this...'). In all, inductive reasoning was a common form of knowledge used to justify claims.

Deductive: From general conclusions to specific results

When engaging with one another and with experts, the participants and experts used deductive reasoning as well. Deductive reasoning included evoking expertise, statistics, or authoritative texts from one side, often to challenge the reasoning and evidence of the opposite side. The participants often received conflicting information from the Pro and Con advocates. During presentations, it was quite common for experts to call on deductively derived reasoning and evidence. For example, Annabell, a physician who had advised both President Bill Clinton and President George W. Bush, claimed authoritatively, 'Finally, 60 cents out of every dollar that we spend in this country, we spend to treat marijuana abuse and dependence. So, it is a very costly problem.' Though this claim was shocking (and perhaps a misstatement), she did not provide any specific source for the claim. The expert used powerful statistics to support her reasoning.

Participants also used deductive reasoning to make their points or to challenge positions that were contradictory (explored more in RQ2). During one exchange, Jennifer was talking to an expert, and points out contradictory 'authoritative texts' on the subject of expert rejection of medical marijuana use:

Yes, yesterday we heard from the opponent side that there is not -- that physicians do not have scientific evidence to be able to confidently recommend marijuana as a medicine, and I know that today, you talked a little bit about the book in 1999, 'Marijuana and Medicine,' and the Institute of Medicine study, and I believe there was a hand-out outside yesterday, that talked about some different studies. And I'm just wondering if you might be able to tell us why it seems like the majority of the medical community does not accept the fact that there is evidence, or why they don't recognize that?

In the text there is a sense of frustration from receiving conflicting evidence supporting a general conclusion and what the current expert testimony says. As Jennifer tries to make up her mind about Measure 74, she is using deductive reasoning, calling on authoritative texts and experts' knowledge to make her point.

Causal

There were attempts by both the experts and participants to use causality to make a case for their position. This evidence uses if-then logic to justify a particular outcome. Both advocates and opponents used such logic to make claims. For instance, one CIR participant found it hard to oppose the measure when he causally reasoned about the increase in jobs: 'You're talking at least probably five or six people per dispensary employed plus the owner. That's a minimum. Let's say six people times 20,000. That's a lot of jobs. One hundred and twenty thousand new jobs, easy.' In another example, another CIR participant, Jackie, is trying to find a cause and effect relationship in the wording of the ballot measure:

Well, our reasoning was that the Ballot Measure is a supply system. And that supply system is dispensaries. So, we were trying to define dispensaries for the voter, because it's kind of in the middle of the Ballot. And so that they don't have to read through all seven pages, they could just say, oh, the supply system is a dispensary.

Cause and effect reasoning was more prominent during deliberation of the voters' pamphlet wording. Causal reasoning is a powerful tool, but was not always supported by generalizable evidence; for instance, one expert suggested that if marijuana is made legal, then experimentation among youths will increase (despite a lack of evidence confirming this claim). Causal reasoning reminds participants that there are implications to their public endorsement of a position in the voters' pamphlet. Though causal reasoning can be powerful, when combined with other forms of evidence (e.g. strong deductive statistics), it was commonly used to express potential or hypothetical outcomes. The reasoning is not always sound in the 'if/then' relationships in causal arguments: many participants relied on a correlational relationship, not an actual cause-effect relationship. Correlational relationships imply an association, but with multiple potential causes. Causality would imply that x must cause y, not just influence y.

Analogical

Participants also use analogies as reasoning to support their claims. Analogies compare two targets and label them similar. In analogical reasoning, concrete findings from other states or other substances were proposed to apply to marijuana as well. For example, George discusses the present availability of alcohol and marijuana and a possible scenario of what could happen if Measure 74 passes:

...what message do you think we'll be sending to these teenagers, when we put marijuana dispensaries on our public streets, and we say, 'It's a medicine. It's not a drug. These people are using this for medicine.' And we sell it publicly, and statements are made. We had a statement just a little bit ago that marijuana is safer than a baby aspirin, or safer

than an aspirin. I think I just added baby aspirin. I correct that. Do you feel that marijuana is safer than a baby aspirin?

Using analogy, George is expressing his outrage that an expert would make such a statement about marijuana being safer than aspirin. On the other end, an expert panelist who was a doctor contended that, 'most young people believe that if they snort heroin, they'll get addicted, but most young people believe if they smoked marijuana they won't.' Opponents often claimed that marijuana was similar to alcohol, cocaine, or other drugs in terms of accessibility, addictiveness, costs, or revenues. Analogies focused on similarities and differences both between substances and between Oregon and other states, often Colorado and California.

Expressing uncertainty

Participants and experts alike used the uncertainty as a form of reasoning. For instance, on Day 4 there is uncertainty in this CIR participant's claim: 'Maybe this should be evidence in favor and against, or something, you know, I don't know. Because this sentence, to me, is vague and ambiguous, and I don't really know what they're referring to. Evidence, what evidence?'

At this point, the participants were only one day away from having to declare their vote for either the Pro or Con position. On both sides advocates used a lack of certainty to their advantage. When voicing their primary concerns, one participant, Patricia, claimed she was in favor because, 'there hasn't been any significant crime rate that we've seen a jump in.' Pro advocates claimed that the limited evidence showed how harmless marijuana was; in contrast, Con advocates suggested that the lack of certainty reflected the danger of legalizing a drug.

Experts were also uncertain about medicinal use of marijuana. When asked to provide statistical evidence of a jump in crime, Sam, a former police chief, expressed uncertainty in his position: 'I don't have an answer that I am able to give you in terms of articulable statistics. Here's the problem that we're facing with law enforcement.' Instead, Sam, and many other experts, retorted with authoritative (deductive) answers calling on their expertise and experience to make an assertion. The expression of uncertainty was a central source of pressure for participants undecided on the measure. Expressing uncertainty communicated that the reasoning was unauthoritative in nature as the group came to a decision.

Questioning

Whether the participant had a comment or genuinely did not know, questions were a common communicative tactic participants used to express both reasoning and disagreement. Questions about evidence often allowed participants to add their opinion to the discourse in a nonthreatening, though sometimes confrontational, way. For instance, Terry provides commentary while asking multiple questions:

So, how can dispensaries, producers, growers, etc., possibly do their jobs if they don't have immunity from a good portion of the marijuana laws? If we're not going to give them immunity for meth or coke or heroin or any of that kind of stuff, only a portion of the medical – I mean, of the marijuana laws. So, how can they possibly deliver and produce the product to those whose bodies are broken and crippled, like through MS or Lupus, or whatever, and no way they could possibly grow their own, how are they going to – how do you think they're going to get their meds? If I was a grower, and if I can't drive over to Maria's house and give her medicine, how is she going to get it?

In this case, the participant is clearly showing his disagreement with the expert to whom he is speaking. His line of questions borders on confrontational as he layers questions to express his disagreement.

Similarly, when questioning an expert against Measure 74, participant Trent asks whether this measure would improve the status quo in Oregon:

Currently, there are dispensaries, or semi-dispensaries, all throughout the state of Oregon operating openly, selling marijuana at whatever their market price they can get for. Now, these are totally unregulated. Nobody's watching them at all now. If this legislation passes, whatever regulation it provides, won't it be better than what we have now?

In his hypothetical response Trent is juxtaposing the present regulation (or lack of regulation) of medical marijuana to what could be the market dynamics if Measure 74 passes. When used as reasoning, questions served as a complex form of providing evidence and expressing disagreement. There were some straightforward questions seeking information or clarification, but many of the questions communicated a form of reasoning as in the example above. Because questions serve the function of both presenting reasoning and expressing disagreement, questions were coded for both RQ1 and RQ2. All of these forms of reasoning help reveal how participants constructed arguments. The section that follows reveals how disagreements about reasoning were managed by CIR participants.

RQ2: Expressing Disagreement about Reasoning

Questioning

Questioning was not only a form of reasoning but also a way of expressing disagreement. As previewed above, both participants and experts called into question the wording of the measure. For instance, in the midst of conflicting evidence, Robert exclaimed: 'What I would like to hear from both of them [advocates] is their thoughts on how this ballot initiative would help their side—more information on ballot measure 74, not about medical marijuana.' Here, Robert is not questioning the benefits or drawbacks of medical marijuana but asking, instead, who stands to benefit and lose in this legislation? Sam, the

Table 2: Expressing Disagreement.

Disagreement (RQ2)	
<i>Axial Codes</i>	<i>Examples</i>
Questioning	'How many jobs would it really create? How many people do you need?'
Repackaging	
· <i>Reframing</i>	'If someone comes in and says it's an overdose, they will put them in a quiet room. If family can sit with them, great. They might give them a valium. That's what they'll do, because that's all it takes. It will wear off, they will be fine. There is no overdose. So, that's a complete farce.'
· <i>Minimizing problems</i>	'I don't, for example, know that there's going to be that big of a problem with increased crime around these dispensaries. That's not my main concern.'
· <i>Semantic distinctions</i>	'...medical marijuana recommendation. It's not a prescription since the FDA does not recognize marijuana as a -- it's an illegal substance so you can't really give a prescription for it.'
· <i>Vagueness</i>	'That's not something that I would be able to answer either. I'm sorry; I can just give information on the rulemaking process.'
Agree to Disagree	'So, we disagree -- three of us disagree.'
Discredit others	'But it does shed a light on her testimony. I think her testimony is biased. It shouldn't even be included.'

expert witness who was a former police chief, reframed the measure by questioning the participants of the CIR: Marijuana 'has 33 of the same carcinogenics as tobacco systems and the cost of the cancer to the state of Oregon – is there going to be enough money in this system in order to fund those fees?' This accusatory question uses analogical reasoning to pose a leading question.

However, Tom was unsatisfied by evidence presented by an expert and asked, 'How about alcohol? Want to make that illegal too and put people in jail for that?' Here Tom complains about weak evidence by analogy and asks for more credible sources from the expert. In all, questioning was a common communication tactic used to express disagreement for both experts and participants. Questioning was not always accusatory; sometimes, participants questioned to express uncertainty or to request clarity. Thus, questioning serves as both a form of reasoning and as a method for expressing disagreement.

Repackaging

Some participants would take information from experts or their own experiences and use their evidence to restate comments or questions. At times reframing was used to shift the focus of conversation, a method to express disagreement. The material could be repackaged through reframing a position, minimizing earlier stated problems, making semantic distinctions, and stressing the vagueness of proposition wording or prior evidence. In one example, Trent reframed the Con position with this comment:

Okay folks. My concern is that this legislation will simply serve as a gateway for inept legislatures and born-again capitalist hippies who see this as a cash cow to help solve budgetary problems or to get rich. I think it's immoral and unethical for the rich to get richer and balance the budget on the backs of people in pain and those that would help them.

The example from Trent is among the most outlandish rhetoric of Day 4. Trent coopts the discussion to make a claim about the morality of legalizing marijuana (calling on an authoritative text of morality, a form of deductive reasoning). Within the norms of the CIR deliberations, Trent is allowed to make his comment without interruption. Reframing was common among expert witnesses too; for instance, one witness suggested that emergency room visits increased with marijuana use. A panelist replied that this is the first time the CIR members had heard of overdoses. The expert replied that an ER visit is not an overdose and that is why there is limited documentation. By reframing, participants and experts were often able to use fewer or less concrete details to make a claim. Participants and experts were also able to shift the focus of conversation with statements like, 'X is not the problem, Y is.' In this way, reframing the words and positions presented by others, participants and experts could disagree without overtly accusing others' reasoning of being inaccurate or false.

Agree to Disagree

Because debating topics of legal and moral significance generates expressions of emotion and firm opinions, the CIR produced examples of people unwilling to change their position. On Day 3, participants had split into small groups for discussion of some key issues that had arisen for them from the presentations of expert witnesses and Pro and Con advocates. One group began to struggle with a claim made by one of the expert witnesses in drug control policy; the expert claimed that cities in California with medical marijuana saw the system abused by limousine services picking up bar patrons at closing time and taking them get prescriptions and then marijuana because they 'don't want the party to end.' One participant took issue with this claim, and the group struggled over how to evaluate that expert's contributions before deciding to move along without reaching consensus on the expert testimony.

George: ...My main point with [the expert witness] – I've been to California, to southern California. I spent a week in Oakland. I never once saw a limousine come by with a sign in the window saying that they'll pick you up and take you to the dispensaries, that sort of thing.

Melissa: There's no sign. She just says that –

George: She was saying that there were signs in the window of the limousine.

Melissa: I didn't hear that, no.

George: That's what I'm saying. I was down there in Oakland for a week, up sometimes until two o'clock in the morning because I wasn't able to sleep. I never saw the limousine. I'm disagreeing with her on that part. I think she's exaggerating. I think she's exaggerating the facts that [the expert witness] has given us.

Jennifer: I don't think we could say evidence is that's exaggerating. It's a piece of evidence. I think you would just throw that out and not include that.

Trent: It sheds doubt on anything else she –

George: Exactly. She was unclear about her information. I would agree with that.

In many cases, both participants and the moderators had to recognize at times there were irreconcilable differences that required agreeing to disagree. Often agreeing to disagree meant letting go of a piece of evidence or literally stating, 'I'm disagreeing with her on that one.' Agreeing to disagree expresses disagreement and helps the deliberative process continue without extended debate on seemingly irreconcilable differences.

Discredit others

Sometimes the CIR dialogue includes discrediting individuals or sources. Sometimes discrediting included evidence, other times it was just opinion. For instance, the physician who was a presidential advisor claimed 'No responsible physician would allow him or herself to be put in the position of recommending an untested substance.' At other points, discrediting came through discussion among participants. In one example, three participants discuss marijuana sellers and police officers:

Carlos: Well, they won't put that ad in the paper, advertising they're selling, and they immediately said, 'Fine, we'll go over there and we're showing [unintelligible].' So, some people are stupid enough to do it.

Jared: Yeah, but you hear a neutral person that, you know, in a Law Enforcement capability, you know, says, yeah, they exist, and there's no way we can really do anything to enforce.

Sandra: And the State Police are so polite. They would never lie to you.

Though it was not common, this sarcastic statement demonstrates that at times participants had to derogate sources or messages in order to justify disagreements over reasoning. Discrediting sources was often combined with

other forms of expressing disagreement (e.g., agreeing-to-disagree about limousines above).

Discussion

Humans argue using the evidence and reasoning that comes to mind (Hornikx & Hahn 2012). Thus, our coding scheme revealed that arguments broadly fit into these categories. Our analysis here hopefully adds to the larger conversation about the role of reasoning in deliberation (e.g. Black 2012; Niemeyer 2019; Roberts et al., 2020), helping identify distinctions between deductive and inductive reasoning, analogical reasoning, causal reasoning, and the use of uncertainty expression as a form of reasoning. As demonstrated in the examples we provided in the text and tables, forms of reasoning were often used in tandem (e.g., pairing analogical reasoning with questioning). Additional research might explore the likelihood that two (or more) forms of reasoning are used in conjunction. Perhaps a semantic network analysis of deliberative data would be best suited to uncover reasoning structures.

We also found that participants disagree in identifiable ways including both repackaging evidence presented by others and discrediting sources or messages. Thus, CIR participants used a wide variety of reasoning extending beyond statistical and narrative. Further, we add to Stromer-Galley's (2007) findings, with additional categories of reasoning by analogy and expressing uncertainty in order to justify claims.

The comprehensive coding scheme of types of reasoning and disagreement-processes provide a useful start for understanding not only how participants reason in deliberative contexts, but of the types of arguments that can be made when discussing controversial topics more generally. This paper provides a foundation for developing a more comprehensive classification system to catalog types of reasoning and how participants express their disagreement with others' reasoning. In other contexts, it is quite possible that more categories could be added with additional subcategories or even major categories. But a balance must be struck between having rich rigor and the categories cohering meaningfully (Tracy 2010).

In developing a sufficiently abstract constant comparative framework, it is necessary to make compromises. For example, rather than classifying 'narrative' as its own category, our scheme finds that use of personal narrative and expert narrative fit different categories of reasoning (inductive and deductive, respectively). Because acceptable arguments are relatively complex, there are many instances in which participant utterances overlap between categories. Thus, unlike a content-analytic approach, this study's constant comparative method explores overlapping and complex forms of arguments not segmented utterance-by-utterance but instead argument-by-argument.

One novel contribution of this study is the finding that expressing uncertainty can be used as a form of reasoning in deliberation. Uncertainty is a useful motivational force, and serves as a distinct form of reasoning; it also seems like it would be fruitful for examining further through the

lens of citizen discussion of risk-related issues (Pidgeon et al. 2009). Another novel contribution is the use of questioning as both a form of reasoning (uncovering underlying logics) as well as a form of disagreement. Questions are a powerful rhetorical tool with strong implicatures (Freed & Ehrlich 2010). Questions represent a particular type of discourse, the interrogative. Implied questioning may also be important as both a form of reasoning and an expression of disagreement. Future research may find the questions and uncertainty as essential pieces of deliberative process. Indeed, the moderators continually asked participants ‘what questions do you have?’ as the conversation transitioned from one activity to another (e.g., witness-to-statement preparation). In coding, the forms of reasoning outlined here accounted for all evidence utilized by participants and experts, but cannot account for moderator authoritative interjections in discussion (e.g. ‘That topic is beyond the scope of our discussion’). Thus, as with questioning, the role of moderators remains relatively unexplored in our findings and deserves additional future attention. Likewise, participant listening is now garnering more attention in deliberation research, and it bears asking in the future what role listening plays in the reasoning process and how listening (or a lack thereof) might affect the importance of disagreement expressions (Hendriks et al. 2019).

In addition to the implications of these findings on reasoning for deliberation scholars, they may also be important for practitioners and evaluators of deliberative processes. First, though some useful criteria for evaluating deliberation have already emerged (e.g. Knobloch et al. 2013), our findings illustrate that expressions of reasoning can vary substantially during deliberation, and suggest that evaluators may want to pay closer attention to these statements as indicators of robust deliberation (Gastil 2008). Perhaps evaluations could look for a broader array of forms of reasoning expressed during an event, ensuring a stronger overall process of collective reasoning (Niemeyer 2019). Also, it is notable that many deliberative forums and methods include some orientation toward evidence and evaluation of its quality to ensure that participants are not swayed by imprecise claims or poor evidence (Knobloch et al. 2013). Perhaps deliberative designers and practitioners should consider instituting similar training for participants to evaluate the quality of arguments and reasoning that are expressed during forums.

Regarding our analysis of expressing disagreement, we fulfill Stromer-Galley and Muhlberger’s (2009) call for examination of the messages used by deliberators. Our results provide a typology of ways participants resolve disagreements, ranging from questioning to repackaging evidence provided by others. For example, both Pro and Con advocates embraced the ambiguity of the proposition: one side claimed the ambiguity would lead to success while the other claimed that ambiguities would yield disaster. It is not surprising that agreeing to disagree was a tactic as it is common in interpersonal research (Sunnafrank 1984). Neither was it surprising that participants discredit the source and message, a tactic

well-recognized in cognitive dissonance theory (Festinger 1962). Overall, it seems disagreeing follows similar cognitive and behavioral patterns as have been uncovered in interpersonal relationships. However, some of these findings might be concerning for deliberation scholars and practitioners. As noted above, perhaps evaluative criteria for deliberation should make note of discrediting as a form of disagreement, which seems counter to the cooperative spirit of deliberative gatherings and could create interpersonal strife. This might also offer opportunities for innovations in deliberative design: Could education about the limits and subjectivity of empirical claims and evidence help reduce the potential negative effects of a participant trying to discredit a fellow citizen or expert?

The CIR deliberations create a collaborative environment in a short period of time—generally about four working days. These findings may be transferable to other group efforts like the CIR where a collaborative culture is desired. Studying how the CIR ramps up the collaborative process quickly could be done through analyzing the transcripts. But the best-case scenario for such a study could be observing the CIR process in-person as it happens. The typology discussed could be the beginning of developing a road map to study additional deliberative forums on various topics, since such events are increasingly being adopted for public discussion and decision making (Leighninger 2012).

Turning next to the limitations of our current study, we should note that our analysis is only focused on two days out of an event that lasted about four and a half days. As noted above, this is because Day 3 and Day 4 of this CIR were the most interactive deliberative days and represent the best opportunity to see citizen reasoning and disagreement in action. That said, future research could examine a larger swath of data; for example, researchers can include multiple CIRs (across varied topics) to increase transferability of the deliberative argument typology. Though data was coded to a point of saturation in coding schemes (Lindlof & Taylor 2011), other research may find additional patterns in different contexts, topic, or across the course of relational development. We found that multiple analyses converged well between multiple researchers, indicating this technique should be valuable in future research.

The codes in this study are not examined for differences between expert and participant statements. In fact, both coders noted that it seemed common for experts to use personal stories as evidence for their claims. Further, as demonstrated in the examples above, it was common for participants to use deductive reasoning (calling on statistics or other authoritative texts) to make a claim. Future studies could also expand to examine similarities and differences in the forms of evidence used across roles, much like the recent work by Roberts and colleagues (2020). This may also reveal power dynamics tied to deliberation.

One barrier we faced in comparing data was determining when and how experts expressed their

expertise as a form of evidence (Roberts et al. 2020; Sprain, Carcasson, & Merolla 2014; Sprain & Reinig 2018). At first, the participants took expert panelists credentials as a valuable cue; later, it was clear that expertise was quite subjective and participants used questioning, repackaging, expressions of uncertainty, discrediting, and other forms of disagreement to show that expert knowledge varied in value. This could have important implications for deliberative design and practice: perhaps more attention should be paid to how to introduce experts into deliberative spaces and note at the outset both the value of their expertise and the subjectivity of evidence they are presenting (Roberts et al. 2020; Sprain et al. 2014). Carman et al. 2015, find public participants become more involved in the deliberation process as they interact with health experts. Future research can study how reasoning changes in a multi-day deliberative event.

Future research could also explore how deliberative forums select or value some evidence above other evidence. A next step could be comparing the typology of the overall evidence, argumentation and analysis to the final citizens' statement at the end of deliberations. Some of the types of evidence or arguments may not make it into the citizens' statement.

Conclusion

This study was conducted using constant comparative analysis method. Coding yielded a saturated typology of both reasoning and methods of disagreement in deliberative contexts. In the future, varied contexts and topics should be analyzed to create a comprehensive understanding of both types of reasoning and disagreement. This typology reveals a nuanced understanding of reasoning and disagreement in deliberation around the topic of medical marijuana. Forms of reasoning included: inductive, deductive, causal, analogical, expressing uncertainty, and questioning. Disagreement was expressed through questioning, repackaging, agreeing-to-disagree, and discrediting others. This typology serves as a base for additional exploration of the deliberative democracy movement, which requires both strong reasoning and genuine disagreement.

Competing Interests

The authors have no competing interests to declare.

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