



# Cross-Disciplinary Research and the Epistemology of Disagreement

Department of Philosophy Colloquium  
University of Sydney  
April 30, 2012

Stephen Crowley / Michael O'Rourke  
Boise State University / University of Idaho  
<http://www.cals.uidaho.edu/toolbox/>



University of Idaho



## Disagreement in the Context of the Toolbox Project

- What we do
- What we see
- What we hear
- Disagreement: Our feelings

## The Philosophy of Disagreement

- Social epistemology
- Philosophy of science
- Epistemology
- Philosophy of language/metaphysics

## The Virtues of Disagreement

## The Toolbox Project

- US NSF-sponsored project that aims to enhance communication in collaborative, cross-disciplinary research (CDR) through philosophical dialogue
- Leading Idea:
  - Enhanced understanding → Enhanced communication
- Philosophy is used to frame research worldviews, highlighting conceptual assumptions about science
- Dialogue is used to reveal those assumptions to self and others

## The Toolbox Approach

- The Toolbox Project focuses on understanding and improving communication about research content within CD collaboration
- The result is an approach with two moving parts (Eigenbrode et al. 2007):
  - The Toolbox instrument – a piece of “philosophical technology”
  - The Toolbox workshop

## The Scientific Research Toolbox Instrument

- One of three instruments we've developed
- A table of 34 philosophical prompts that illuminate fundamental research assumptions
- These distinctions are broadly about the world (i.e., *metaphysical*) and about the investigator (i.e., *epistemological*)
- Each broad category is divided into three sub-categories, or *modules*
- Within each sub-category is a “Core Question” that announces the theme and several “Probing Statements” that develop the theme

## Scientific Research Toolbox excerpt

*Metaphysics*

### IV. Reality

*Core Question: Do the products of scientific research more closely reflect the nature of the world or the researchers' perspective?*

17. Scientific research aims to identify facts about a world independent of the investigators.

*Disagree*

*Agree*

1    2    3    4    5            I don't know            N/A

18. Scientific claims need not represent objective reality to be useful.

*Disagree*

*Agree*

1    2    3    4    5            I don't know            N/A

19. Models invariably produce a distorted view of objective reality.

*Disagree*

*Agree*

1    2    3    4    5            I don't know            N/A

20. The subject of my research is a human construction.

*Disagree*

*Agree*

1    2    3    4    5            I don't know            N/A

21. The members of this team have similar views concerning the reality core question.

*Disagree*

*Agree*

1    2    3    4    5            I don't know            N/A

## The Toolbox Workshop

- Participants complete the Toolbox using the Likert scales
- The team engages in a 1.5 to 2-hour workshop to share their responses to Toolbox prompts and discuss viewpoints
- The workshops are lightly facilitated
- Each completes the Toolbox again after the session
- Various follow-up options available to teams



## The Achievement of Mutual Understanding

- Collaborative CDR founders on misunderstanding
  - People charge ahead, thinking they agree when they don't
  - People stop moving, thinking they disagree when they don't
- It is a real achievement to recognize and appreciate the views of collaborators
  - A cognitive achievement
  - Might be good to think about this as a group-level achievement



## Getting to “No”

- You do collaborative CDR because you need the differences
- The goal isn't to produce a group of like-minded individuals, agreeing on all the details
- The goal is rather to respect the differences and *harness* them
- This can and does result in productive disagreement
- The Toolbox focuses and facilitates these disagreements

## Sample Toolbox Dialogue Exchange

- Consider the following workshop exchange about hypotheses between an ecologist (P01) and an economist (P02):

P01: [On] intuition and predispositions?

P02: Yeah, that's how I build my hypothesis.

P01: But that's not quantitative.

P02: But then I develop a hypothesis and I test a hypothesis and it's done [using] quantitative methods.

P01: But that's not research, that's just freeing stuff ... boiling down to a hypothesis.

## Responses to the Toolbox Workshop

- One participant put it this way:

“This exercise helped to illuminate many of the group's defaults and hidden assumptions. These can cause problems later that might manifest as a topical disagreement, but which actually are philosophical differences. The exercise helps to address these areas early and in a more abstract way, so that it's easier for individuals to become familiar with differences and biases in a neutral setting.”

## Responses to the Toolbox Workshop

- Emphasizing the import of mutual understanding about research assumptions, another said,

“Failure to understand these can lead to false agreement, and could in the end undermine the project.”
- As an example of insight gained in the workshop, one participant commented:

“My views of ‘science’ have broadened to encompass a less rigid definition than the one I was taught. I learned that philosophical orientations, even with the same scientist, may differ depending on the type of project. The Toolbox allowed me to get a better understanding of my colleagues’ philosophies of science.”

## The Toolbox Project and Disagreement

- It comes in degrees
  - Global
  - Precise
- It's not the same as difference
  - Difference can lead to dismissal
  - Disagreement is difference that feels like it needs resolution

## The Toolbox Project and Disagreement

- It's hard work
  - You need to learn about yourself
  - You need to learn about your collaborators
- It's a desirable state (or it can be)
- It's not an end state (given that resolution is required)

## Four Philosophical Sub-disciplines Interested

- Social epistemology
  - Opinion aggregation
  - Learning from others
- Philosophy of science
  - Role of disagreement in science on multiple levels—not hierarchical (Lugg, Laudan)
  - Value of consensus

## Four Philosophical Sub-disciplines Interested

- Philosophy of language/metaphysics
  - Truth relativism vs. contextualism
  - Concerns about “taste”
- Epistemology
  - Epistemic peerhood
  - Reasonable disagreement—peers, uniqueness, equal weight vs. non-equal weight views



## Details on the Philosophical Perspectives

- For social epistemology
  - It's about how to manage disagreement
  - It notices that difference may be valuable
  - Tends to be summative (voting paradox-ish) rather than transformative (i.e., giving rise to qualitatively different views)
- For philosophy of science
  - It's about how to preserve it and respond to it
  - It notices that this is a shared co-operative activity
  - It tends to undermine group cohesion, so tendency to “group think”

## Details on the Philosophical Perspectives

- Both of these matter but they are not what we are after
  - We want to think about how to achieve it
  - And what it is

## Four Philosophical Sub-disciplines Interested

- Epistemology
  - Uniqueness, peer-age
  - Modify credence (equal weight vs bias views)
- Philosophy of language/metaphysics
  - Forms – contextual vs. relative truth
  - Contrary Propositions – not necessary
  - Felt conflict vs linguistic denial – “nuh uh” (Sundell 2011)
  - “Sharpening” uses (Barker 2002)

## M&E Sub-disciplines Interested in Disagreement

- Social epistemology (Bradley, Tollefson, etc.)
  - Is: Opinion aggregation, Learning from others
  - But: Takes disagreement for granted
    - Agents have clear views on particular propositions
- Philosophy of science (Wylie, Solomon, Longino, etc.)
  - Is: Disagreement in science – role and resolution
    - Value of consensus vs. fear of ‘group think’
    - One rationality (facts, methods, goals hierarchy) vs. Pluralism
  - But: Doesn’t distinguish kinds of disagreement
    - Sources of disagreement tend to be ‘black-boxed’

## M&E Sub-disciplines Interested in Disagreement

- Philosophy of language (Barker, McFarlane, Sundell, etc.)
  - Arises out of work on ‘taste’
    - E.g., SJC: Vegemite is delicious, MOR: NUH-UH!
  - Issue: is there a proposition directly in contention?
    - It depends – what’s a disagreement?
      - Felt sense of conflict
      - Licensing of linguistic denial (e.g. Nuh-uh ....)
  - Kinds of disagreement
    - Content, Context, Presupposition, Implicature etc
    - Key example for us - ‘Sharpening’
      - speaking on behalf of communities,
      - specifying group standards
  - But: This is an ontology not an epistemology of disagreement

## M&E Sub-disciplines Interested in Disagreement

- Epistemology (Feldman, Kelly, Elga, etc.)
  - Arises out of work on expert disagreement
    - E.g. different weather forecasts
  - Issue: What is the right epistemic attitude to take in these cases?
  - Key assumptions
    - Uniqueness – a body of evidence supports just one attitude to a given proposition
    - Peer – Share all evidence and abilities to interpret that evidence
  - Solution: Adjust one's credence
    - E.g. equal weight view
  - But: Treats disagreement as an 'end state'

## Additional Desiderata from the Literature

- We noted several desiderata above that emerge from our Toolbox work
- In addition, there are the following that emerge from the literature:
  - Disagreement is not (necessarily) about a proposition
  - Disagreement may concern group standards
  - Disagreement impacts the group
  - Not all disagreements are the same

## Harnessing Difference, Managing Disagreement

- In the context of collaborative CDR, identifying and harnessing differences are key
- There will be differences of opinion about the science
  - Some of these will be compatible, in that they can both be pursued at once without exclusion
  - Some however will require a choice—one or the other, neither, or some negotiated compromise
  - The latter group comprises the disagreements that primarily interest us



## Harnessing Difference, Managing Disagreement

- These disagreements are *achievements*
  - They can be a breakthrough for the team
  - They represent an opportunity for the team to integrate difference in pursuit of project objectives
- As a practical reality, though, this entails the need to manage disagreement as a group
  - This obviously has an interpersonal side
  - But it also has an epistemic side

## Theorizing Disagreement as Virtuous

- Collaborative CDR groups will need to manage disagreement in a way that:
  - Doesn't undermine collaborative cohesion
  - Advances the group's scientific agenda
- The virtues associated with the former figure into virtue ethics and the latter virtue epistemology
- We focus on the latter group

## Theorizing Disagreement as Virtuous

- A product/process distinction:
  - Disagreements as products (“thin” disagreements) are epistemic conflicts
  - Disagreements as processes (“thick” disagreements) are the conflict plus the response, which could be resolution
- The former is the focus in much of the literature mentioned above, in particular epistemology
- The latter captures our view that disagreements need not be thought of as end states of difference to be avoided

## Theorizing Disagreement as Virtuous

- Thick disagreements that advance a project will need to be managed by the group in a way that is sensitive to its epistemic characteristics
- One way to think of this is in terms of responsibilism, using trait virtues (cf. Zagzebski 2008)
  - Disagreement management might be a trait virtue on its own
  - More likely, it resolves into traits such as self-awareness, empathy, intellectual openness, intellectual honesty, persistence
- Question: Should these be understood as distributed across the individuals, or as seated in the group?

## Theorizing Disagreement as Virtuous

- Alternatively, one could think of this in terms of faculty-based virtue reliabilism (e.g., Sosa 2010)
- Here the virtues would correspond to an epistemic competence
  - It seems odd to posit a faculty associated with disagreement management in an individual
  - But we could think of it rather as a collective, group competence partially seated in individuals

# Acknowledgments



- NSF SES (#0823058) and the University of Idaho for funding
- Co-PIs Sanford Eigenbrode (UI), J.D. Wulfhorst (UI), Shannon Donovan (UAA)
- Other faculty collaborators: Christopher Williams (statistics)
- Students and Postdocs: Brian Crist, Ruth Dahlquist, Renee Hill, Justin Horn, Chris Looney, Ian O’Loughlin, Liela Rotschy, Brianne Tice
- Partners: UI Resilience IGERT (NSF), BEACON (NSF), ITHS (NIH), REACCH (USDA), Northwest Climate Science Center (USGS)
- Members of other participating projects and teams—approximately 650 participants
- Project advisors: Frank Davis (UC Santa Barbara), Paul Griffiths (University of Sydney), Julie Thompson-Klein (Wayne State University)



# References



## References

- Barker, C. (2002) The dynamics of vagueness. *Linguistics and Philosophy* 25: 1-36.
- Eigenbrode, S. D., O'Rourke, M., Althoff, D., Goldberg, C., Merrill, K., Morse, W., Nielsen-Pincus, M., Stephens, J., Winowiecki, L., Wulfhorst, J. D., Bosque-Pérez, N. (2007) Employing philosophical dialogue in collaborative science. *BioScience* 57: 55-64.
- Jakobsen, C. H., Hels, T., McLaughlin, W. J. (2004) Barriers and facilitators to integration among scientists in transdisciplinary landscape analysis: A cross-country comparison. *Forest Policy and Economics* 6: 15-31.
- Jantsch, E. (1972) Towards interdisciplinarity and transdisciplinarity in education and innovation. *Interdisciplinarity: Problems of Teaching and Research in Universities*. Paris: Organization for Economic Cooperation and Development.
- Klein, J. T. (2010a) *Creating Interdisciplinary Campus Cultures: A Model for Strength and Sustainability*. San Francisco: Jossey-Bass.
- McDonald, D., Bammer, G., Deane, P. (2009). *Research Integration Using Dialogue Methods*. Canberra: ANU E-Press. URL = [http://epress.anu.edu.au/dialogue\\_methods\\_citation.html](http://epress.anu.edu.au/dialogue_methods_citation.html).
- Morse, W. C., Nielsen-Pincus, M., Force, J. E., Wulfhorst, J. D. (2007) Bridges and barriers to developing and conducting interdisciplinary graduate-student team research. *Ecology and Society* 12: 8 (<http://www.ecologyandsociety.org/vol12/iss2/art8/>, 12 Jan 2008).
- National Academy of Sciences, Committee on Facilitating Interdisciplinary Research and Committee on Science Engineering and Public Policy (NAS). (2004) *Facilitating Interdisciplinary Research*. Washington, DC: National Academies Press.
- Sosa, E. (2011) *Knowing Full Well*. Princeton: Princeton University Press.
- Sundell, T. (2011) Disagreements about taste. *Philosophical Studies* 155: 267-288.
- Zagzebski, L. (2008) *On Epistemology*. Belmont, CA: Wadsworth.

