

53. Interdisciplinarity without Borders

Howard Gadlin and L. Michelle Bennett¹

O wonder! How many goodly creatures are there here! How beauteous mankind is! O brave new world! That has such people in it.

— Shakespeare, *The Tempest*, Act v, Scene 1

After reading Gabriele Bammer's majestic and inspiring manuscript along with commentaries by an array of distinguished colleagues, it seems almost churlish to express any qualms about I2S, a project that in principle represents the apotheosis of collaborative work conducted from multi- inter- and trans-disciplinary perspectives. While we share an interest and commitment to collaborative interdisciplinary research, we have concerns about both the desirability and the feasibility of establishing I2S as a distinct discipline. At the risk of being labelled latter-day Luddites, we will explore those concerns here. Mind you, although we raise questions about the notion of I2S as a discipline, we are also enormously excited by and committed to the challenge that stimulates this book: 'How can academic research enhance its contributions to addressing...major problems facing human societies?' In addition, we share Bammer's belief that there is enormous promise to interdisciplinary research: it opens a path to understanding and solving complex scientific problems that were previously beyond the reach of researchers working within the confines of single disciplines and limited in their ability to collaborate with others. The integrative approach that is proving so fruitful in addressing scientific problems is not, however, necessarily transferable to tackling complex social problems, even those for which scientific findings are relevant.

Our hesitations increase when we note that I2S is intended to be much more than an approach to interdisciplinary research; it also entails an almost utopian vision of evidence-based, fundamentally rational decision making applied to significant social problems. The proposed discipline is intended to synthesise the work of policy makers and stakeholders as well as researchers. Please note, we are not objecting in principle to all approaches that incorporate the consideration of scientific findings into policy considerations and related efforts to delineate and resolve social problems. It is the proposal to merge the distinct domains of inquiry, advocacy and policy analysis/formation into an integrated discipline that gives us pause. With the combination of scientists, policy makers

¹ Howard Gadlin and Michelle Bennett were each invited as senior scholars who have 'made significant contributions to thinking about collaborative research'. They chose to co-author a joint commentary.

and stakeholders in mind, we tried to envision an I2S approach to addressing one of the more volatile issues of our time: climate change. It is hard not to test the thoughtful, rational and dialogical processes of I2S against the realities of current acrimonious, politicised policy debate. In the climate change matter, for example, even scientific expertise is attacked and de-legitimised as the effort of technocratic elites to impose their liberal perspective on everyone else. In this controversy, overwhelming evidence of the seriousness of the problem is ignored in part because of the very source of the knowledge (scientists) and in part because it leads to conclusions regarding necessary regulations and limitations on pollution, which are opposed because of a generalised resistance to regulations qua regulations. And climate change is hardly unique in terms of the dynamic of the conflict. Look at health care, drug policy, screening mammography, nuclear power or comparative effectiveness research and you see the same dynamic. The challenge is much more complicated than making research findings relevant to decisions regarding policies designed to address social, economic and environmental problems. Fundamentally the task is a political and socio/cultural endeavour not a disciplinary one.

When Alice Roughley states '[t]he absolute brilliance of the book is that with the foundational research into dialogue methods it tackles the most critical integration methodology issue, that of analysing data generated through different disciplines and stakeholder perspectives/values', we share her admiration for Bammer's vision but not her belief that the issue has been resolved. While it is true that 'dialogue-based methods use conversation to... "*jointly create meaning and shared understanding*"' (Chapter 6), these methods (which we practise and promote heartily) cannot be effective with stakeholders who do not desire jointly created meaning or shared understanding. Furthermore, while dialogue-based methods are essential to create understanding, other factors must be addressed before such methods can move from shared meaning to decision making.

This is no mean feat and entails coming to terms with more than differences in meaning and understanding of key concepts and perspectives. Any attempt to integrate facts, values and interests into a decision-making matrix must first address questions of scope: what topics are under consideration; what are the appropriate methods of defining and selecting the topics; which stakeholders and which perspectives are to be included; who decides all this and according to what criteria? While considering these questions it should also be noted that one of the most effective and best-known programs for bringing together opposing sides on highly controversial issues for the purpose of finding areas of shared understanding, the Public Conversations Project,² has been somewhat successful only because its programs eschew decision making. Sometimes, the

2 <<http://www.publicconversations.org/>> (accessed 15 February 2012).

only way to move opposing stakeholders to listen to one another is to reassure them that understanding each other's position does not require that they come to an agreement about a decision.

Of course there are many examples of successful decision-making processes that involve the participation of scientific experts, policy makers and stakeholders, but almost all of these begin with participants committed to generating possible solutions to a policy matter or a social or environmental problem. We do not doubt that one can develop processes for setting policy or making crucial decisions that involve people from the three domains (science, advocacy and policy), but we believe that the challenge in doing this is very different from the challenge of integrating multiple scientific disciplines and methodologies into an inter- or trans-disciplinary field. I2S is an attempt to bring together components that are incommensurable and we believe that any approach for dealing with incommensurability must be based on acknowledging and maintaining the distinctiveness.

In her commentary, Alison Ritter asserts that I2S transforms the 'impasse between passive delivery of scientific evidence and convincing persuasion'. She then identifies functions that define work within Bammer's I2S framework

- inclusive participatory processes
- dealing with values, value congruence, boundaries and scoping
- dealing with unknowns within the research process
- being a member of a scholarly discipline

and asserts that each of these serves to resolve the research–advocacy dilemma. Not only do we believe Ritter is mistaken—the dilemma is not resolved—we also suggest that the research–advocacy dilemma ought not be resolved. It is precisely this dilemma that provides the creative tensions necessary for democratic policy decision-making processes.

Interestingly there is already a considerable amount of theorising, thinking and activity directed towards creating decision-making processes for controversial, multi-party issues and conflicts that require cooperation and collaboration among groups of people quite disparate in values, perspective, culture, power and just about every dimension of identity you can list. A brief overview of this work reveals an intense focus on process and attention to the dynamics of communication, dialogue, empowerment and participation. It should be noted that each of the four factors listed above is regularly attended to, directly or indirectly, in the work of those who facilitate/mediate controversial, multi-party issues. One of the most influential areas of activity is in the area of participatory democracy, much of which is inspired by and flows from the work

of the German philosopher Jürgen Habermas.³ His analysis of conditions that foster communicative rationality and his thinking about the public sphere have stimulated widespread discussions, theorising and research about democratic processes, voting and decision making. Closely related is a vast amount of work in the area of collaborative governance, which has led to revisions in ideas about the nature of leadership, processes for decision making and effective organisational structure.⁴

Among the other related developments has been the growth, in the United States, of negotiated rule-making (reg-neg), a process whereby federal agencies work with stakeholders and interest groups to negotiate the substance of proposed rules, which are then submitted for public review and comment. Naturally such processes involve attending to the dynamics of negotiation and require the leadership of skilled facilitators able to enhance the quality of communication across the various interest groups. Such processes also raise important questions about the composition of such groups—a matter to which we will return later because it has some bearing on the I2S vision as well.

Federal agencies are not the only organisations experimenting with processes for bringing together diverse groups of people to address matters of policy or to consider approaches to the solution of social problems. Non-government organisations such as the Keystone Center⁵ and CDR Associates⁶ have been working in the very same areas I2S aspires to for dozens of years now. The Keystone Center describes its mission as bringing ‘together today’s public, private and civic sector leaders to advance solutions to society’s most challenging environmental, energy, and public health problems’. The Keystone Center has just completed facilitation of a ‘Research Integrity Dialogue’ addressing issues involving the use of scientific results in the chemical, agricultural and pharmaceutical industries.⁷ CDR describes itself as helping ‘people—leaders and managers in the private sector, government, diverse organizations and public interest groups—talk, find common ground and reach agreements on difficult issues’.

In all of the efforts described above there is considerable attention paid to, and experience in, work with dialogue-based methods and much that we in the interdisciplinary sciences can learn from. One of the most important lessons is that there is much, much more to establishing collaborative interdisciplinary teams than ‘knowledge synthesis’. In addition, when we go beyond integrating

3 Habermas (1991).

4 See O’Leary and Bingham (2007, 2009).

5 <<http://www.keystone.org/>> (accessed 15 February 2012).

6 <<http://www.mediate.org/>> (accessed 15 February 2012).

7 <<http://www.keystone.org/images/keystone-center/spp-documents/Health/Research%20Integrity%20Rountable%20Report.pdf>> (accessed 26 September 2012).

knowledge from different disciplines and methodologies into decision making and policy formation we have to be very careful about thinking of this as an integrative process.

Missing from consideration in the I2S book are two issues that we consider central to any effort to better incorporate scientific knowledge and stakeholders into public policy decision making: conflict of interest and bias. The US Institute of Medicine defines conflict of interest as ‘circumstances that create a risk that professional judgments or actions regarding a primary interest will be unduly influenced by a secondary interest’. Attending to conflict of interest and bias is not a mere formality. It is essential to establish the credibility of the scientific information that is incorporated into policy formation and decision making. Two recent papers⁸ attest to the necessity to attend to these matters.

It is in considering issues of conflict of interest and bias that we have our strongest hesitations when we envision I2S. At the National Institutes of Health (NIH), where we work, conflict of interest and bias generally are handled by maintaining sharp distinctions between stakeholders and decision makers. Consider, for example, the description in Box 53.1 of the NIH Consensus Development Program for reviewing evidence about a particular medical topic. We have also added some of the considerations and recommendations of the US Bipartisan Policy Committee.

Box 53.1 Description of the NIH Consensus Development Program⁹ and Some Considerations and Recommendations of the US Bipartisan Policy Committee

A consensus development process is initiated when the scientific leadership in one of the 27 NIH Institutes determines that there is likely to be sufficient convergence among the research findings in a particular area to reach consensus, sometimes on highly controversial topics. This initiates a systematic evidence review on the chosen topic performed by one of the Agency for Healthcare Research and Quality’s Evidence-Based Practice Centers. The resulting report is circulated to the consensus panel members and also posted to the Consensus Development website approximately six weeks prior to the conference. Once the conference begins, the report serves as a foundation of high-quality evidence upon which the conference will build.

⁸ Conrad and Becker (2011); The International Life Sciences Institute North America Working Group on Guiding Principles (2009).

⁹ Taken (often verbatim) from <<http://prevention.nih.gov/cdp/about.aspx>> (accessed 4 September 2012).

The conferences are held over two and a half days. The first one and a half days are dedicated to plenary sessions, during which invited expert speakers present information. These speakers are followed by ‘town hall forums’, in which open discussion occurs among the speakers, panellists and the general public in attendance. The panel then develops a draft statement on the afternoon and evening of the second day, and presents it on the morning of the third day for audience commentary. The panel considers these comments in executive session and revises its draft accordingly. The conference ends with a press briefing, during which reporters are invited to question the panellists about their findings.

Each conference panel comprises 12 to 16 members, who can give balanced, objective and informed attention to the topic. Panel members

1. must not be employees of the US Department of Health and Human Services
2. must not hold financial or career (research) interests in the conference topic
3. may be knowledgeable about the general topic under consideration, but must not have published on or have a publicly stated opinion on the topic
4. represent a variety of perspectives, to include
 - practicing and academic health professionals
 - biostatisticians and epidemiologists
 - clinical trialists and researchers
 - non-health professionals with expertise in fields relevant to the specific topic (e.g. ethicists, economists, attorneys)
 - individuals representing public-centred values and concerns.

In addition, the panel as a whole should appropriately reflect racial and ethnic diversity. Panel members are not paid a fee or honorarium for their efforts. They are, however, reimbursed for travel expenses related to their participation in the conference.

The conferences typically feature approximately 21 speakers: three present the information found in the Evidence-Based Practice Center’s systematic review of the literature; the other 18 are experts in the topic at hand, have likely published on the topic and may have strong opinions or beliefs on the topic. Where multiple viewpoints on a topic exist, every effort is made to include speakers who address all sides of the issue.

The panel's draft report is released online late in the conference's third and final day. The final report is released approximately six weeks later. During the intervening period, the panel may edit its statement for clarity and correct any factual errors that might be discovered. No substantive changes to the panel's findings are made during this period.

Each Consensus Development or State-of-the-Science Conference Statement reflects an independent panel's assessment of the medical knowledge available at the time the statement is written; as such, it provides a 'snapshot in time' of the state of knowledge on the conference topic. It is not a policy statement of the NIH or the Federal Government.

Notice how carefully the distinction is made between scientific consensus and policy.

Look also at the recommendations of the Bipartisan Policy Committee,^a a committee formed by four former US Senate Majority Leaders to address the following dilemma described in the introduction to the report:

The use of science in the formulation of regulatory policy—by both the Executive Branch and the Congress—has been a political flashpoint in recent decades. Policymakers often claim that particular regulatory decisions have been driven by, or even required by science; their critics, in turn, have attacked the quality or the interpretation of that science. Such has left the U.S. with a system that is plagued by charges that science is being 'politicized' and that regulation lacks a solid scientific basis. As a result, needed regulation may be stymied, dubious regulations may be adopted, issues can drag on without conclusion and policy debate is degraded. Moreover, the morale of scientists is weakened, and public faith in both government and science is undermined.

The question is not whether scientific results should be used in developing regulatory policy, but how they should be used. This report is structured around three sets of questions that are at the heart of the debate over the use of science in regulatory policy. Those questions are:

- What kinds of activities or decision making amount to 'politicizing' science? How and to what extent can one differentiate between the aspects of regulatory policy that involve scientific judgments and those that involve making policy recommendations (which are inherently political)?

- When and how should Federal agencies empanel advisory committees? How should members be selected? How should conflicts of interest and biases of potential members be handled? What is scientific balance and how can it be achieved? How can the independence and integrity of committees' deliberations be assured?
- What studies should agencies and advisory committees review in formulating regulatory policy? How should they be weighed? What role should peer review play and how might peer review be modified and strengthened?

Among the recommendations are the following.

Recommendation One: The Administration needs to promulgate guidelines (through executive orders or other instruments) to ensure that when federal agencies are developing regulatory policies, they explicitly differentiate, to the extent possible, between questions that involve scientific judgments and questions that involve judgments about economics, ethics and other matters of policy.

Recommendation Two: The Administration should promulgate guidelines (through executive orders or other instruments) directing agencies to follow the policies described below on: when to consult advisory panels on scientific questions, how to appoint them (including how to deal with conflicts of interest and biases) and how they should operate. Congress should pass, and the President should sign into law, any statutory changes needed to implement these policies.

a. <<http://bipartisanpolicy.org/library/report/science-policy-project-final-report>> (accessed 4 September 2012).

Including these references is not meant to endorse them. Important to notice in these various efforts are the incredible challenges associated with our efforts to have scientific knowledge contribute more directly to the solution of social problems and the formulation of policies intended to improve the quality of life. While we share Gabriele's desire to find ways to have knowledge matter more than it does nowadays and we agree with the unarguable observation that current decision making is under-informed by rigorous research and that methodologically sound interdisciplinary research could help enormously in understanding and addressing major social and environmental problems, we are wary of the idea of I2S as a discipline. We must remind ourselves that scientific and technological professionals tend to believe that their expertise is under-appreciated and under-utilised. But even if this is true, we have to be careful to

educate about and advocate for the potential value of the knowledge we create and we have to be equally careful not to slip into the elitist assumption that those who know the most know the best.

When we look at some of the new disciplines that have resulted from interdisciplinary mergers—bioengineering, neuroscience, biochemistry, systems biology—we see fields that were created by taking one way of thinking and applying that to problems in other fields (bioengineering) or we see the results of interdisciplinary efforts to address complex scientific problems that could not be addressed within any single discipline. But in all cases the new discipline was driven by scientists attempting to solve problems, to find ways to conduct research on complex phenomena. The new disciplines were emergent phenomena. No-one set about to create a new discipline and then try to apply it. It was all about the science. But in the case of I2S we face a problem of a different sort from those faced by scientific disciplines. The aim of I2S is not to bring together fundamentally similar components but rather to bring together incommensurable components. Interdisciplinarity is a common thread in the newly emergent disciplines; it is an approach, but the components of the approach are called forth by the problems. Our quarrel is with the push to carve out a discipline of interdisciplinarity.

In this regard, we share the conclusion reached by Dawn Youngblood in a recent study of interdisciplinary studies and bridging disciplines: ‘What interdisciplinary studies can therefore learn from the bridging disciplines is the importance of not becoming a domain, as domain creates territory and territory creates niche dominance. Instead focus on the process of finding solutions to problems and answers to important questions.’

Contributed November 2011

References

- Conrad, J. W. and Becker, R. A. (2011). ‘Enhancing credibility of chemical safety studies: emerging consensus on key assessment criteria’. *Environmental Health Perspectives*, 119 (6), 757-64.
- Habermas, J. (1991). *The Structural Transformation of the Public Sphere: An inquiry into a category of bourgeois society*. Cambridge, MA: MIT Press.
- O’Leary, R. and Bingham, L. B. (2007). *A Manager’s Guide to Resolving Conflicts in Collaborative Networks*. Arlington, VA: IBM Center for the Business of Government.
- O’Leary, R. and Bingham, L. B. (eds). (2009). *The Collaborative Public Manager*. Washington, DC: Georgetown University Press.

The International Life Sciences Institute North America Working Group on Guiding Principles. (2009). 'Funding food science and nutrition research: financial conflicts and scientific integrity'. *American Journal of Clinical Nutrition*, 8 April; <<http://www.ajcn.org/content/early/2009/04/08/ajcn.2009.27604>> (accessed 30 November 2011).

Brief Biographies

Howard Gadlin has been Ombudsman and Director of the Center for Cooperative Resolution at the National Institutes of Health since 1999. Previously he was University Ombudsperson at the University of California Los Angeles (UCLA) where he was also Director of the UCLA Conflict Mediation Program and Co-Director of the Center for the Study and Resolution of Interethnic/Interracial Conflict. He is a former Professor of Psychology and is currently studying the dynamics of scientific teams and collaborations, and developing new approaches to addressing conflicts among scientists.

Dr L. Michelle Bennett is the Deputy Scientific Director for the National Heart Lung and Blood Institute (NHLBI), National Institutes of Health (NIH), in Bethesda, Maryland. She is responsible for programmatic integration and strategic planning across the basic, translational and clinical areas of the organisation. Applying her knowledge of the critical elements that enable team science and collaboration, she facilitates interdisciplinary efforts by bringing together scientists with diverse expertise to solve complex scientific problems.

Bennett, Gadlin and Samantha Levine-Finley co-led an initiative to understand the fundamental characteristics that contribute to successful scientific team functioning, which resulted in the development of a workbook, *Collaboration and Team Science: A field guide*, which serves as a primer for investigators who are building or participating on a research team.

This text is taken from *Disciplining Interdisciplinarity: Integration and Implementation Sciences for Researching Complex Real-World Problems*, by Gabriele Bammer, published 2013 by ANU E Press, The Australian National University, Canberra, Australia.