

# CONCLUSION: EXPANDING INTERNATIONAL DIALOGUE ON INTERDISCIPLINARITY

by

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The Association for Interdisciplinary Studies (AIS) has brought scholarship on interdisciplinarity in other countries to the attention of its members through conference presentations and articles by scholars beyond the organization's original base in the United States (US). It also has played a leadership role by introducing its English-speaking audience to the wider literature in two previous special volumes of the AIS journal, *Issues in Interdisciplinary Studies*. Since the bulk of writing in English on interdisciplinarity does not draw routinely on work published in other languages, the articles in those special volumes had a two-fold role. They informed the English-speaking audience about scholarship in other languages and, in doing so, helped establish a foundation for international dialogue. Volume 12, published in 1994, featured European perspectives from authors in Belgium, Britain, Germany, and the Netherlands, with the addition of a reprinted article by a Russian scholar. The editor, former AIS president Julie Thompson Klein, introduced that special volume by situating their contributions within the history of interdisciplinarity in Europe. Volume 28, published in 2010, featured articles on interdisciplinarity in primary and secondary education in the United States, Australia, Colombia, France, Spain, and Switzerland as well as the Canadian provinces of Ontario and Quebec. Given its recency, the 2010 special volume provides an insightful backdrop for the 2016 Special Section featuring Latin American perspectives.

Introducing the 2010 volume, co-editors Yves Lenoir and Klein described the insights that emerged. Comparison was complicated by different terms for interdisciplinarity in the authors' languages and, even in the same

language, differing contexts and purposes. The political organization of education in a country was a further factor. In Spain, curriculum is determined by a central government, in contrast to canton-level control in Switzerland. Priority also differs. In Quebec interdisciplinarity was only introduced during the last educational reform in 2004, and in Colombia national and municipal policies had not seriously proposed integration of curricula, disciplines, and knowledge at the time of publication. In contrast, the US has a history dating from the early 20<sup>th</sup> century, and France a 40-year presence in agricultural education. Despite differences though, three shared themes appeared: preparing students for life in society and the job market, developing new ways of thinking to foster autonomy, and improving learning processes. Socio-economic agendas have also heightened the priority of problem-solving skills across countries and, even when not cited explicitly, a constructivist epistemology was evident. Conceptualization still differed, however. In Ontario, Irish and Prussian models have been influential, along with humanities and liberal arts as well as the work of Neill, Piaget, and Holt. In Colombia, Dewey and the European New Education and Active School movements shaped practices. In the US the concept of integration has been prominent, along with the Project Method, Herbartians, and Dewey. And, in Switzerland, the systemic approach, holistic perspective, and Pestalozzi have been influential.

Lessons learned from the special volume on interdisciplinarity in schools repeat in this featured Section. Comparison across Latin America is complicated by different terms for interdisciplinarity in authors' languages and, even in the same tongue, differing contexts and purposes. The political organization of education in a particular country is an added factor, as well as different intellectual histories and readiness to implement new approaches. Generalization is further complicated by the premise of a distinctly Latin American context. This Section is a first step toward exploring that premise, with emphasis on how complex problems are being addressed in an interdisciplinary manner. Generalizations about interdisciplinarity in other countries are no less problematic. The notion of an "American" tradition of interdisciplinarity, for instance, ignores the diversity of practices, let alone the widespread presumption that "America" is the United States despite the presence of Canada on the same continent and a conception of "Latin America" that includes the Caribbean. To speak of a "European definition" of transdisciplinarity, as some do, is also problematic. The connotation of problem-oriented research involving stakeholders in society is prominent in northern Europe, a connotation that emerged in German-speaking countries in the late 1980s and early 1990s. Yet, Basarab Nicolescu of the International

Center for Transdisciplinary Research (CIRET) is critical of the narrowness of definition grounded in problem solving that ignores a conception of transdisciplinarity informed by the worldview of complexity in science and a moral project that is transcultural as well.

A number of possibilities for widening dialogue about interdisciplinarity in Latin America have emerged from this Special Section. The most overriding is Vienni's proposal for "regionalism," simultaneously responsive to the Development context. Furthermore, she shifts the lens of interdisciplinarity from the negative connotation of intervention to overcome obstacles to the positive connotation of generating novel approaches that also foster collective identity. Moreover, she and other authors bring theoretical perspectives of Spanish and Portuguese authors to the attention of northern scholars and practitioners who write primarily in English. The body of literature on interdisciplinarity in English is rich, but it does not apply universally to the Latin American context, and vice versa. Scholarship on interdisciplinarity in Spanish and Portuguese has a scant presence in English-language literature. In addition, relevant writings in Asian languages still tend to be neglected. Only by filling such gaps can we test the applicability of theory and practice at a general level in the forge of contingencies driven by the particularities of geographical regions with unique histories, literature, constraints, and opportunities.

The work of fostering dialogue at both intra-continent and international levels may also be understood in terms of another concept—"boundary work." Boundaries are the focus of study in a widening range of areas, from organizational theory and management to interdisciplinary science and health care. "Boundary work" is a composite label for the claims, activities, and structures by which boundaries are created, maintained, crossed, and reformulated between knowledge units. Thomas Gieryn (1983) coined the term for an ideological style that rhetorically constructs boundaries in three ways: expanding authority or expertise into domains claimed by other professions or occupations, monopolizing authority and resources, and protecting autonomy over professional activities. Gieryn focused on demarcations of science from non-science, though subsequently the concept was extended to studies of disciplinarity as well as interdisciplinarity (Fisher, 1993, pp. 13-17; Klein, 1996, 57-84).

The related concept of "boundary objects" is particularly insightful for thinking about how communication and collaboration take place when scholars and educators are crossing boundaries of not only disciplines but also national borders. Following Star and Griesmer's (1989) definition, "boundary objects" are entities that are robust enough to maintain unity

across contexts but plastic enough to be delimited, manipulated, and bounded in individual practices and separate interpretations. A specimen, a map, a piece of information, a technology, or an idea may function as a boundary object, facilitating dialogue. The classic example was development of Berkeley's Museum of Vertebrate Zoology. It was a focal point for collective work among individuals from different social worlds, such as amateur collectors and museum professionals. Other examples are familiar in interdisciplinary research. Data, for instance, are shared across disciplines, and molecules built by one research group may be analyzed by another group. In the context of a large transdisciplinary research project on urban transportation in Germany, the *CITY:mobil*, the concept of "mobility" operated as a boundary object framing the process of identifying the main research question (Jahn, 2008).

While not calling it a boundary concept, Vienni has proposed the idea of "interdisciplinarity" might be an emerging regionalism in Latin America. It could function as a boundary concept, in her words "a linking concept for the region." Moreover, she suggests, the concept of a "network of practice" is a potential "linchpin" of efforts towards regionalism. Common frameworks and hybrid domains of theory and practice help identify and leverage dispersed knowledge, information, and resources. Four examples stand out in this Special Section: Cecilia Hildalgo's framework of a "community of practice," Marcel Bursztyń's domain of sustainability science, Rodrigo Arocena and Judith Sutz's focus on Development, as well as Juan Carlos Villa-Soto and Norma Blazquez Graf's example of the organizational structure of a center. Three additional examples benchmark growing efforts to foster global dialogue beyond particular regions, and potentially across them in the future.

## Models for Promoting International Dialogue

The first of the additional examples is a conference forum. The 2015 conference of the Swiss-based Network for Transdisciplinary Research (td-net) featured a panel bringing together leaders of initiatives aimed at collecting resources central to two concepts in the discourse of interdisciplinarity—integration and transdisciplinarity. Their interactions to date have been limited to individual presence at conferences of kindred organizations. Hosted by Christian Pohl of td-net and Klein, the panel was a crucial first step in thinking comparatively across their sites of work. The participants came from Canada, the US, Scotland, Switzerland, and Australia.

AIS (Association for Interdisciplinary Studies): <http://www.units.muohio.edu/aisorg/>

Former AIS president Rick Szostak described the “About Interdisciplinarity” resource at the “Resources” link on the AIS website. It covers definitions, philosophy, history, and best practices spanning communication, teaching, research, administration, and public policy analysis. It also provides links to other online resources.

I2S (Integration and Implementation Sciences): [i2s.anu.edu.au](http://i2s.anu.edu.au)

Gabriele Bammer previewed the I2S website, part of a global network initiative to improve research impact on complex real-world problems. The “Resources” link compiles tools, cases, and approaches along with information about pertinent journals, professional associations and networks, and conferences. It also connects to digital posters prepared for the first international conference on I2S.

Short Guides: [www.tinyurl.com/idwiki\\_](http://www.tinyurl.com/idwiki_)

Catherine Lyall of the University of Edinburgh introduced the wiki-based Short Guides to interdisciplinarity. The “ID Short Notes” link leads to helpful topic digests including developing and reviewing research proposals, building and managing research teams, management challenges, leadership, evaluation, and funding. Related guidelines also appear in Lyall, Bruce, Tait, and Meagher (2011).

Td-net (Network for Transdisciplinary Research): <http://www.transdisciplinarity.ch/>  
Pohl presented the td-net toolbox on “Co-producing Knowledge.” Focused on solving complex problems in collaboration with stakeholders in society, it addresses a wide audience, with links to pertinent methods, practical experiences, criteria, and related toolboxes, while guiding choice of options and their applicability.

Team Science Toolkit: <http://www.teamsciencetoolkit.cancer.gov/public/home.aspx>  
Kara Hall presented the US-based National Cancer Institute’s Team Science Toolkit, a user-generated searchable repository of resources on team science, a practice that is often interdisciplinary in nature. The primary categories of resources are methods and measures, supported by an annotated bibliography and guided by Editor’s Picks.

The remaining two examples are publications. The book *Transdisciplinarity in Philosophy and Science*, edited by Bazhavor and Scholz and subtitled

*Approaches, Problems, and Prospects*, collects essays in English and in Russian. After an Introduction sketching a “roadmap” of transdisciplinarity, three sections follow:

- Approaches to Definition;
- Problems of Transdisciplinary Cognition [Typology];
- Prospects: Possibilities and Limitations.

This volume is the first publication in Russia focused on transdisciplinarity from the perspectives of both foreign and domestic authors. The roadmap traces the concept of transdisciplinarity to the term’s introduction at a 1970 conference sponsored by the OECD, a pioneer step toward international comparison across member nations of the Organization for Economic Cooperation and Development (Apostel, 1972). This book, published in both Russian and English languages, carries out the goal of contributing to a global scientific literature on transdisciplinarity. It also acknowledges the new problem-oriented connotation involving stakeholders in the public and private sphere in the actual research process, benchmarked in another book that collected results of the first major international conference on transdisciplinarity in 2000. Attended by over 800 participants from roughly 51 countries, the meeting was sponsored by the Swiss National Science Foundation’s decade long project, the Swiss Priority Programme Environment (Klein, et. al., 2000). Efforts launched by that conference have continued under sponsorship of td-net.

Vienni and colleagues have also played a leadership role in fostering international dialogue. The book they edited last year *Encuentros Sobre Interdisciplina* (2015) reprints essays on interdisciplinarity originally written in English, then translated into Spanish, as well as comments and contributions from Uruguayan authors that document Latin America contributions to the literature of interdisciplinarity. It is broad in scope, with essays organized into five sections:

- What is interdisciplinarity?
- Is it possible to define interdisciplinarity?
- How is interdisciplinarity investigated?
- What is the impact of interdisciplinarity on social practices?
- How is interdisciplinarity promoted?

Dialogue on interdisciplinarity will continue to center on individual countries conducted in their languages. Interdisciplinarity is a situated

practice, and theory bears the signature of cultural origins. However, common needs and interests across the globe warrant investing time and professional focus on international dialogue. Doing so will improve the way we all perform interdisciplinary research and education.

**Biographical Note:** JULIE THOMPSON KLEIN is Professor of Humanities Emerita in the English Department at Wayne State University and an Affiliate of the TdLab at the ETH-Zurich university for science and technology in Switzerland. Klein is past president of AIS and former editor of *Issues in Interdisciplinary Studies*. Her books include *Interdisciplinarity* (1990), *Interdisciplinary Studies Today* (co-edited 1994), *Crossing Boundaries* (1996), *Mapping Interdisciplinary Studies* (1999), *Transdisciplinarity* (co-edited 2001), *Interdisciplinary Education in K-12 and College* (edited 2002), *Humanities, Culture, and Interdisciplinarity* (2005), *Creating Interdisciplinary Campus Cultures* (2010), and *Interdisciplining Digital Humanities* (2015). She was also Associate Editor of *The Oxford Handbook on Interdisciplinarity* (2010, 2017). Klein has received numerous honors, including the Kenneth Boulding Award for outstanding scholarship on interdisciplinarity. She consults on interdisciplinary programs throughout North America. Klein has also served on task forces of the National Institutes of Health, National Science Foundation, and National Academies of Science, and is on boards of the Science of Team Science network and HASTAC (Humanities, Arts, Science, and Technology Alliance and Collaboratory). Klein is active internationally as well. In 1978-79 she was Visiting Foreign Professor in Japan, in 1987 a Fulbright Lecturer in Nepal, and in 1995 a Foundation Visitor at the University of Auckland.

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