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Editorial:

Introduction: Centering on the Edge

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1. Centering on the Edge

[T]here is growing resistance to embracing interdisciplinarity, in part because we are simply tired of hearing about it and in part because, in practice, it often requires attending the meetings of more than one department. Few are willing to concede that the reason we now need it so desperately stems from the mismatch between how we structured knowledge decades ago to create departments and how we organize it today. (Tartar, 2005, p. B2)

As the international academic enterprise settles into the first decade of the twenty-first century, the future of our work is in flux. Academic specializations established a century ago no longer adequately reflect the growing points of human thought, and the opening of higher education to wider populations of students has challenged the relevance of traditional disciplines for future lives and careers. In this context, teachers and scholars have been rethinking the academic enterprise and the functions it serves for their students; new centers are being organized around what was once thought to mark the edge of knowledge-making. At Bryn Mawr College in the USA, where many of the contributors of this special issue teach, the Center for Science in Society has been an important locus for such restructuring.

This special issue gathers together 10 articles written by 17 teacher-scholars who have collaborated in this kind of rethinking at Bryn Mawr and far beyond it. Their synthetic work, variously known as trans-, multi-, or interdisciplinarity, brings together diverse perspectives needed to address socially relevant issues. Here we draw on the “manifesto” of Basarab Nicolescu in using the term *transdisciplinarity* to describe the widest spectrum of work between, across, and beyond all disciplines. As you will see, our contributors employ their own lexicons and also exhibit a range of responses to the challenges of this sort of work. Some are deeply engaged in disciplining synthetic and integrative thinking, while others are questioning the merit of doing so. All of them rise to the challenge of writing across fields to reach a broad audience.

Each of the articles in this special issue has a particular focus, arising from the distinctive preoccupations of the authors; taken together they contribute collectively to a dialogue about the novel directions transdisciplinary work is taking in the academy. Colleges and universities where transdisciplinarity is being piloted, like the experiments featured in this issue, frequently serve not only as early warning sites for general problems, but also as test beds for general solutions. Such experiments acknowledge the fractures in old formations of knowledge and reflect pressures for change coming from a variety of directions: the inclinations of individual teacher-scholars, as well as administrations, foundations, government agencies, scholarly and professional organizations, and the employers for whom we prepare our students.

We offer this special issue to other educators who, like us, find themselves beset by the challenges and excited by the possibilities that are provided by a systematic cross-pollination of methodologies. We examine the arenas where different divisions of inquiry--humanist, scientific, social scientific, both within the academy and beyond it--overlap and diverge.

Central to our common story is the way all of us, amid the well-documented need for and dangers of specialization, have found ways of nurturing the vitality of our scholarship, and along with it a means for redefining our own intellectual product. We have seen, for instance, that measures of achievement must be revised to reflect changing and increasingly diverse standards. As this issue shows, some of us have found new venues for work that has long engaged us; others of us have reconceived our paths. All of the contributors have come to an expanded understanding of our work, in relation both to our own education and to our role as world citizens.

2. Articles in the Special Issue

The articles in this special issue have been organized into three groups: (1) Crossing the Boundaries, (2) Reframing the Structures, and (3) Rethinking the Questions. In the first section, authors describe a variety of ways in which they have extended their disciplinary work beyond academia. In the second section, contributors examine ways of unsettling the conventional structures that separate academia from the world beyond. In the third, teacher-scholars reflect on the ways in which revised educational structures can bring about profound revision in our work as educators.

2.1. Crossing the Boundaries

The first article in this collection is a personal exploration of the benefits of conversations that extend beyond the walls of the university. An economist, **David R. Ross**, describes a program of bringing himself into conversation with noneconomists about important public policy issues, an exchange that not only provides tools for coping with difficult problems, but an awareness of the limitations of “thinking like an economist.”

Next, three educational theorists, **Jody Cohen**, **Alice Lesnick**, and **Darla Himeles**, reflect on the implications of the interdisciplinarity inherent in their own field: what are the structural constraints and what are the creative, responsive, and critical stances available to them? They explore these questions with attention to analytic, reflective, and interactive work in the classroom, in various forms of publication, in action, and program development.

In the following article, a literary critic, **Carol Bernstein**, uses the concept of “the constellation” to characterize the relations among interdisciplinarity, cultural memory, and comparative literature. In this piece, which provides a prototype for the various links being forged between broad social realities and our efforts as teachers, a narrative thread foregrounds the relations between scholarship and pedagogy.

The final article in this first section is by an educational theorist, **Alison Cook-Sather** and a historian, **Elliott Shore**, who describe the radical possibilities for revisioning educational processes that are offered by the evolution of connected information technologies. These intellectual exchanges reveal both the processes whereby disciplinary understandings are tested and modified and the social consequences of the kinds of decision-making that follow from such modifications.

Some of these exchanges identify problems not best dealt with from a single perspective; others apply specific expertise to more general problems. The boundaries at stake in this first group of articles are various; they include the disciplinary ones of economics, education, history, and literary studies, but they also question the whole notion of who has “faculty,” and invite into the conversation those who have historically not been participants in academia. Crossing such boundaries means challenging, contributing to, and extending the disciplinary work of teacher-scholars, to alter the ways it is understood by members of the larger public, and to incorporate those understandings back into academia.

2.2. Reframing the Structures

The second set of articles describes the structures necessary to unsettle these conventional boundaries between producers and consumers of knowledge, between theoretical and applied work, between academia and the world beyond it. They do so--to borrow Vartan Gregorian’s words--by acknowledging the need for “specializing in the construction of the whole,” in the “relationships and connections . . . among seemingly disparate

disciplines, discoveries, events and trends,” and for building “bridges among them that benefit the understanding of us all” (Gregorian, 2004, p. B12).

The first article in this second section takes a comprehensive look at the rewards and difficulties of encouraging interdisciplinary scholarship. A historian of science, **Paula Viterbo**, outlines the development of her interdisciplinary academic field and discusses the advantages and pitfalls of its incorporation in college curricula.

The second article in this section examines the key structures that arise out of the abstract and practical aspirations of teaching interdisciplinarity. Drawing on the work of scholars in the Association for Integrative Studies, as well as on his own study of economic growth, **Rick Szostak**, a professor of economics, writes about why and how he teaches interdisciplinary research practice.

What lessons can new interdisciplinarians learn from long-established “interdisciplines”? In the next article, an anthropologist, **Dawn Youngblood**, compares multidisciplinary and interdisciplinary projects and then looks into two long-established “bridging disciplines,” anthropology and geography. She argues for approaching interdisciplinary work in terms of process and problem-solving, rather than in terms of creating new domains, which create territories and niche dominance. She ends with the provocative counter-question of whether, by following process rather than domain, any discipline might become interdisciplinary.

In the final article in this section, four members of a school of public health, **Linda Neuhauser**, **Dawn Richardson**, **Sonja Mackenzie**, and **Meredith Minkler**, describe the importance of transdisciplinary work in their field: in defining improved conceptual frameworks, discovering general trends, and designing models and recommendations for improving public health education. Drawing on a new model for public health education that prepares students for complex practical work, such as responding to large-scale natural disasters, they emphasize the need to reorient academic and research institutions in a more transdisciplinary direction.

2.3. Rethinking the Questions

The last pair of articles follows up on this line of thinking with a cluster of further considerations. These articles report on new models of education that are contributing to the development of social democracies in the larger world, and demonstrate that the revision of educational structures brings with it a profound revision of the work we do as educators.

Faculty members, staff, and students engaged in translating their synthetic intellectual activity, research, scholarship, and teaching to a larger public are seeking, in Stephen Jay Gould’s terms, a “*consilience of equal regard* that respects the inherent differences, acknowledges the comparable but distinct worthiness . . . and seeks to emphasize and nurture the numerous regions of actual overlap and common concern” (Gould, 2003, p. 259).

The penultimate example of such a new model uses contemporary insights from feminist critical theory and the literary device of *synecdoche*. A feminist literary scholar, **Anne Dalke**, and a molecular physicist, **Elizabeth McCormack**, the coeditors of this special issue, explore the possibility that transdisciplinary knowledge is productive because it maximizes serendipity, that is, because of its insistently uncertain nature. They describe the fruits of 10 years of collaborative work and draw on student learning experiences in a recent course on gender and science. The dichotomous frameworks and part-whole correspondences that dominate much disciplinary discourse are dismantled in innovative intellectual work, in which disciplinary presumptions interrogate and unsettle one another, thereby producing fresh questions and answers.

In the final article in this collection, a biologist, **Paul Grobstein**, draws on observations in neurobiology to suggest that effective social organizations might profit from a distributed, interactive character, rather than hierarchical or anarchistic ones. In his account, a key element in small social group and Web-based education is a specifically defined process of ongoing story creation, sharing, and revising.

3. Nurturing Transdisciplinarity

Transdisciplinarity flourishes best when it is conceived of as an *emergent* phenomenon, with foci waxing and waning as contributors are encouraged to try out new areas of broad common interest. What holds together such fluid distributed entities is not a single topic or gathering point, but rather the broad context of intellectual work, the excitement of exploring new ways of knowing, and the use of new Web-based technologies that make these collective explorations visible and consequently useful to many.

Striving to become the “stewards of a place of learning and teaching” described by Catharine Stimpson in “Reclaiming the Mission of Graduate Education” (Stimpson, 2004, p. B6), we are actively rethinking the range of issues now besetting both the academy and the larger society in which we participate. At Bryn Mawr College, where the Center for Science in Society has been actively restructuring the ways in which such problems might be addressed, interdisciplinary conversation offers “continual encouragement and support for trying out new things, as a valuable counterbalance to the essential and itself valuable conservatism of academic disciplinary structures” (Grobstein, 2000).

With the publication of this special issue, we extend that encouragement to others. We thereby invite you to join us in the shared risk and pleasure of reorganizing familiar knowledge and producing new understandings, using transdisciplinary methods and structures from which we all may benefit.

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