DISCIPLINARY HEGEMONY MEETS INTERDISCIPLINARY ASCENDANCY:

Can Interdisciplinary/Integrative Studies Survive, and If So, How?

by

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Editors' comment: *Stuart Henry's article, "Disciplinary Hegemony Meets Interdisciplinary Ascendancy," was first presented in a symposium at the AIS annual conference in October 2005. Henry has since revised and submitted it for publication in* ISSUES. *We are pleased that conference session respondents have also expanded upon their contributions to the session, and we intend to devote space in the upcoming 2006 volume to viewpoints generated by them regarding Henry's concerns about the climate facing interdisciplinary programs.*

We anticipate that Stuart Henry's article will stimulate additional complementary or contrasting responses to his vision. We welcome brief commentary (2-4 pages, double-spaced) and will select from those submissions a sample representing a range of institutions and attitudes toward the current politics of interdisciplinary studies and toward demonstrations of program viability. Please send manuscripts for this project to the ISSUES *co-editors no later than December 1, 2006.*

ISSUES *regularly welcomes articles that address the ways in which higher education both embraces and critiques interdisciplinary developments. These might include research studies or case studies that highlight implications for other programs. What are the lessons learned from success or failure, and what kinds of outcomes assessment of students' learning have influenced the trajectory of interdisciplinary programs?*

Abstract: This paper explores the increasing challenges and possible solutions to the sustainability of undergraduate interdisciplinary studies programs at public universities in North America. It analyzes the causes of the current trend that is threatening to undercut experimental and innovative programs in undergraduate interdisciplinary teaching and learning. It asks and seeks to answer why this threat is happening now, at a time of increased recognition of the value and significance of interdisciplinarity, a time when interdisciplinarity is in its ascendancy. It documents some key indicators of this ascendancy and explains why this growth poses a threat to the ideology of disciplinary hegemony. It points out that this threat is particularly acute: during times of declining state budgets for public higher education; when there is a rise of big science and the diminution of liberal arts; and when the politics of grant funding celebrates interdisciplinarity as a strategy for grant success. The paper concludes by identifying strategies to combat these challenges to interdisciplinary undergraduate education. In particular, it describes the tactics of resistance deployed against the politics and practice that threaten merger, downsizing or actual closure of IDS programs. Finally, the paper suggests the development of a dialogue on policy to both inform and to provide a resource base for those programs facing similar challenges in the future.

In his now classic analysis of the problems of birth, growth and survival of interdisciplinary studies programs, Martin Trow (1984/85, p. 3) argued that rather than surviving or declining because of their own intrinsic qualities, "the success and failure of interdisciplinary studies programs are a function of their relation to the rest of higher education, in their own institutions and elsewhere." He further states that "the fate of any given program has depended heavily on whether its founders saw American higher education as a failure, which they would try to repair or redeem, or as a system of great richness and diversity to which they would add additional richness and diversity, seeking their own ecological niche in the jungle of American colleges and universities" (1984/85, p. 3). And he observes:

> programs that have abused their hosts while claiming unique and almost ethereal virtues, have failed. Those that have claimed a place in the spectrum of higher education to serve that segment of the student population which wants and can profit from what interdisciplinary programs and colleges can offer, have on the whole, survived and flourished. (1984/85, p. 3)

But what about the failure of the survivors? Some 20-plus years after Trow we are observing that even the "survivors" are being threatened by closure or have been substantially scaled back, and this is at a time when the general concept of interdisciplinarity has moved beyond being new and innovative but has, for several years, been on the ascendant. Perhaps we need a new dimension to Trow's analysis, one that raises the question of why even long-standing interdisciplinarity programs, that have become departmentalized, institutionalized and routinized, are ultimately still vulnerable to the power of the disciplines, and if so perhaps contesting the terrain will ultimately prove to provide greater long-term resilience than finding an ecological niche. As advocates for this more radical approach express it:

> Unless we find ways of challenging the hegemony of disciplinary "work," it is unlikely that universities will be capable of responding to the challenges posed by the metanarratives of our time. . . . Discipline positions itself as a prototypical model for generating authority and thus sets the standards for judging what counts as knowledge and determines who will be afforded access to resources and influence. Deviance from its strictures can lead only to marginalisation. Under such a regime, interdisciplinarity can merely hope for reflected glory. It will retain a derivative status as long as practitioners frame their petitions for integrative strategies in the language of discipline—it will remain constituted as "otherised" research, inhabiting the gaps between authorised knowledge. . . . This strategy of introducing interdisciplinarians as innovators against a backdrop of "business as usual". . . is an insufficient basis on which to mount a challenge to disciplinary hegemony, however. Discipline is more than a cognitive schema. Embedded in the wider political economy, it is sustained by maintaining linkages and regulating resource flows and via the selective irrigation of particular subjectivities (with all the infrastructural investment this entails). Discipline is not simply an intellectual pursuit; it is also institutionally produced. Accordingly, in addition to the question of interdisciplinary method, we require an understanding of how activists of interdisciplinarity might contest the structural determinations of discipline. (Rogers, Booth & Eveline, 2003)

In this paper I consider the challenges facing interdisciplinary studies teaching units, especially at publicly funded higher educational institutions in the United States, in an era of declining state budgets, changing societal needs, increasing student enrollment, and a national shift in value, both by funding agencies and educational policy makers, away from disciplinary research and teaching toward multi- and interdisciplinary research and

teaching. While such developments might be seen positively, this view would be naïve in light of what we know from Foucault's insight on university power/knowledge relations, informed by Gramsci's concept of hegemony, brought together in Ben Agger's (1991) powerful concept of "disciplinary hegemony."

Here I argue that while integrative and interdisciplinary studies programs, departments, or colleges embody the essence of best practices that enhance student learning and prepare students for the complexity of real world issues, they are also highly vulnerable to institutionalized disciplinary hegemony, "the politics of disciplinary advantage" (Rogers, Booth & Eveline, 2003), that is rooted in "disciplinary parochialism and disciplinary imperialism" (Sayer, 1999). In the competition for scarce resources, interdisciplinary programs are often seen as relatively cost-inefficient, even though from a student learning perspective they are instructionally effective. Informed by interdisciplinary research that is itself marginalized by some mainstream disciplines, criticized for "blurring distinctions," and for being "conceptually trite," both interdisciplinary studies programs (IDS) and interdisciplinary research projects (IDR) are subject to "otherising" (Rogers, Booth & Eveline, 2003), as well as to the deviance process of labeling, stigmatizing, and devaluing (Pfhul & Henry, 1993).

Since becoming the dominant mode of knowledge production in universities in the late 19th century, disciplines have come to control content, pedagogy and the organization of higher learning. This means "the university is not just populated by fragmented disciplines, but defined as the place of learning through them" (Rogers, Booth & Eveline, 2003). Thus, it is not surprising that university educational systems are governed by the norms of disciplinary subsystems (Kluver & Schmidt, 1990, p. 307, cited in Rogers, Booth & Eveline, 2003), rather than having autonomy of their own, or being open to shaping by interdisciplines. Indeed, this mirrors the more general governance of disciplinary knowledge production by powerful communities of academic experts who control what counts as acceptable content and methods for research agendas, grant proposals, and journal articles: "By such power/knowledge configurations, 'outsider' or unofficial knowledge may be disqualified and dismissed as non-rigorous, undisciplined and unprofessional" (Weiner, 1998).

We should not neglect the politics of interdisciplinarity, however, which is used as a strategy by some academic administrators to manage corporatized profit-driven universities, who downsize departments into "interdisciplinary units" under the legitimating guise of promoting excellence (Readings,

1996), or in order to "recoup interdisciplinary ventures as cost-effective programs" (Foster, 1996) and, in the process, aim to recapture control from the disciplines (M. Moran, 2005; J. Moran, 2002).

Thus, given the challenge that interdisciplinary teaching (IDS) and interdisciplinary research (IDR) present to mainstream disciplinary dominance, and given their use by administrators to curb the power of disciplinary hegemony, it is also not surprising that their value is contested as unenviably "experimental" and, like the experimental "universities without walls" of the late 1960s (Hendra & Harris, 2002), they are particularly vulnerable in times of economic challenge since they can be sacrificed, absorbed and even dispersed under the charge that they lack rigor and standards. The ultimate challenge for IDS and IDR units, then, is how to prevent these innovative developments in knowledge production and learning from being reined in during times of fiscal crisis, from being assessed by disciplinary rather than interdisciplinary standards, from being stunted by conformity to university norms rooted in disciplines, and from being used as strategies in the politics of university administration. More constructively, supporters of interdisciplinarity need to identify strategies through which IDS and IRS units can thrive and champion the kinds of reforms that will enhance higher education's capacity to address the complex, multifaceted issues of the 21st century.

I will begin with a summary of recent trends in interdisciplinary growth and seek to explain why they have occurred. I will then place this interdisciplinary ascendancy in the wider context that threatens to undermine it, drawing attention to the effects of political reactions by the disciplines to the perceived threats they presently face. I will provide examples of these challenges and identify the source of the threats, not least the claims by leading educational policy makers about the increasing irrelevance of the disciplinary university. I will go on to suggest ways that interdisciplinary research/studies might survive as a sustainable, rather than marginal, mode of knowledge production and transmission and provide a catalog of practical tactics whereby IDS and IDR units can mobilize should they be faced with serious attempts to destroy them.

Interdisciplinary Ascendancy

Over the past 30 years there has been a rebirth of the early 18th century approach to knowledge, which finds interdisciplinarity once again in the ascendancy. There are many ways to document the growth

of interdisciplinarity, and several have been explored by leading interdisciplinary scholars who have richly mapped its historical and contemporary development (Klein, 2005b; J. Moran, 2002). Here I use three indicators of interdisciplinary growth: (1) the increased numbers of students graduating with undergraduate and graduate degrees across a range of disciplines rather than specializing in one; (2) the elevation of interdisciplinarity as a priority of government and private funding agencies as evidenced by expectations for how major grant-funded research is conducted; and (3) the proliferation of multi- and interdisciplinary research projects. Here I am especially concerned with how the growth in the number of students studying for interdisciplinary degrees might be affected by the other two factors.

1. Growth in Undergraduate IDS

When IDS undergraduate instructional programs began in the late 1960s and early 1970s, they were truly experimental. By the mid-1990s they had become more established (Figure 1). By 2001, multi- and interdisciplinary studies degrees were the 13th most popular undergraduate field of 33 listed by the National Center for Educational Statistics (NCES, 2003). In the years from 1992 to 2002, the annual average number of students graduating in the United States with a bachelor's degree in multi/interdisciplinary studies was 26,000 per year (NCES, 2003). This compares to a mere 6,200 in the late 1960s to early 1970s when the current long-standing interdisciplinary programs began (Newell et al, 2003). Between 1991 and 2001 the number of students in multi- and interdisciplinary studies programs grew by 48% (NCES, 2003). According to the NCES data there are now some 416,000 students who have graduated with a multi- or interdisciplinary bachelors degree, and if present trends continue, this will top one-half million by 2007. Moreover, these students now graduate from around 652 programs nationwide and have the possibility of going into 215 interdisciplinary master's and 65 doctoral programs. In several institutions interdisciplinary studies has moved from program status to departmental status (Table 1), and in a few notable cases, it has achieved School status (e.g. Miami University of Ohio, Arizona State University).

Related to the growth in interdisciplinary programs is the emergence since 1990 of a burgeoning number of books devoted to interdisciplinary studies. Carolyn Haynes, in a review of Julie Thompson Klein's (2005) genealogy of increasing interdisciplinarity in the changing American academy, notes the transition in the literature on interdisciplinarity from the period between 1979

Figure 1: Bachelor's Degrees Granted in Multi/Interdisciplinary Studies, 1970-2001
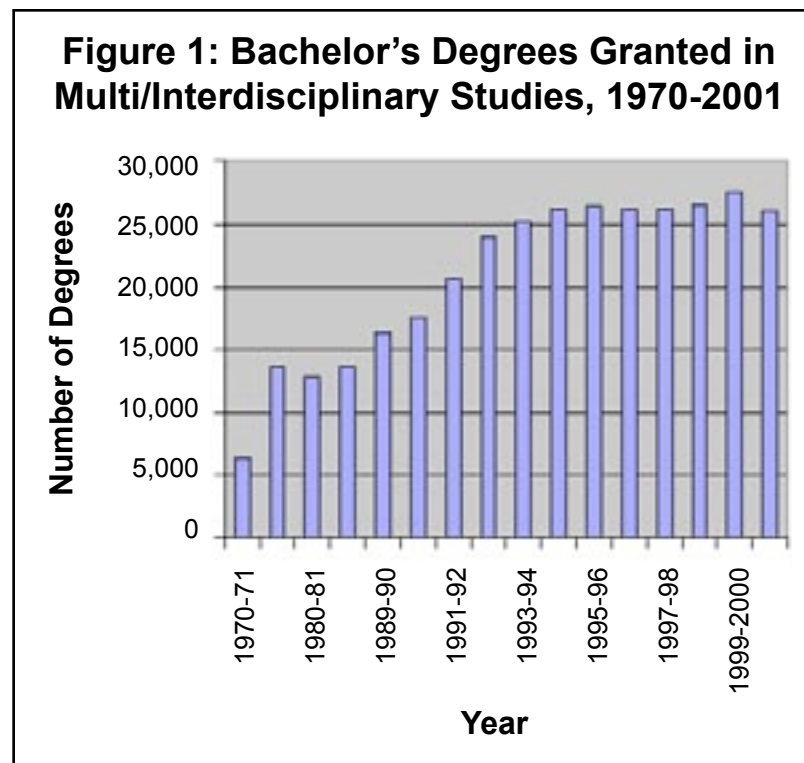
Source: NCES, 2003

and 1990, when the field was first defining and justifying itself, to the next decades, when it emerged as a literature supportive of practice. She states,

since 1990, the bulk of the professional literature has focused . . . more on developing a canonical set of key readings and theories on interdisciplinarity (Newell, Interdisciplinarity) responding to concrete problems, or offering theories or information that address specific practical topics. During this second stage, an edited volume of interdisciplinary pedagogical approaches (Haynes), a book on interdisciplinary general education courses (Seabury), a guide to interdisciplinary resources (Fiscella and Kimmel), a book on team-teaching (Davis), directories of interdisciplinary undergraduate and

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**Table 1: Academic Structures
in Which Interdisciplinary Studies are Housed**

Examples of Schools
School of Interdisciplinary Studies, Arizona State University
School of Interdisciplinary Studies, Miami University, Ohio
School of Interdisciplinary Studies, Ouachita Baptist University, Arkansas

Examples of Departments
The Department of Interdisciplinary Studies at Appalachian State
  University
The Department of Interdisciplinary Studies, California State University–
  East Bay
The Department of Interdisciplinary Studies, University of Georgia-
  Athens
The Department of Interdisciplinary Studies, Norfolk State University
The Department of Interdisciplinary Studies, Old Dominion University
The Department of Interdisciplinary Studies, St. Cloud State University
The Department of Interdisciplinary Studies, Salem State University
The Department of Interdisciplinary Studies, University of South Alabama
The Department of Interdisciplinary Studies, Wayne State University
The Department of Interdisciplinary Studies, University of Wisconsin–
  Madison

Examples of Programs
*(some of which function as departments even though they are named
programs; others do not as they have no resident faculty)*
The Interdisciplinary Studies Program at Bentley College
The Interdisciplinary General Education Program at California State
  Polytechnic University at Pomona
Interdisciplinary Studies in Letters and Science at Chabot College
The Interdisciplinary Scholars Program at Chestnut Hill College
The Center for Interdisciplinary Studies at Davison College
Interdisciplinary Studies in Culture and Society at Emory University
The Interdisciplinary Studies Program at Guilford College
The Interdisciplinary Studies Program at Houston Baptist University
The Center for Interdisciplinary Programs at Loyola University Chicago
Interdisciplinary Studies in Three Departments, San Diego State
  University
Interdisciplinary Studies Program at University of Texas–Arlington
The Interdisciplinary and General Studies Program at Wheaton College
The Urban Affairs Interdisciplinary Program at Wright State University

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Ph.D. programs (Edwards; Szostak); a study of interdisciplinary faculty (Lattuca) and textbooks on interdisciplinary studies (Augsburg; Repko), among many others have been published. (Haynes, 2005, p. 1)

Indeed, commenting on the emergence, in 2005, of the first two textbooks in the field (Augsburg, 2005; Repko, 2005) Castellana (2005, p. 1) states, "The publication of a first text in a field has political significance marking a coming of age."

This growth in instructional programs and its accompanying literature has been encouraged by leading policy advisers' recognition of the value of interdisciplinary undergraduate education. Since the late 1990s, important voices in academe, such as Ernest Boyer in his 1998 Report on *Educating Undergraduates in the Research University*, and Harvard's declaration that it was time to revise its undergraduate core curriculum (*The Chronicle of Higher Education,* 2004) have advocated interdisciplinarity for undergraduate education. They have emphasized the value of broad rather than disciplinary-based inquiry, and the value of the integration and unity of knowledge, rather than its fragmentation. Indeed, undergraduate degrees in interdisciplinary or integrated studies are consistent with the recommendations of the Boyer Commission on Higher Education:

> As research is increasingly interdisciplinary, undergraduate education should also be cast in interdisciplinary formats. . . . [B]ecause all work will require mental flexibility, students need to view their studies through many lenses. Many students come to the university with some introduction to interdisciplinary learning. . . . Once in college, they should find it possible to create individual majors or minors without undue difficulty. Understanding the close relationship between research and classroom learning, universities must seriously focus on ways to create interdisciplinarity in undergraduate learning. (Boyer, 1998, p. 23)

Illustrative, too, is the Carnegie Corporation President Vartan Gregorian's assessment that college education has become consumer-driven, fragmented, disconnected, overly specialized and meaningless. He argues:

> We must reform higher education to reconstruct the unity of knowledge. . . . [T]he complexity of the world requires us to have a better understanding of the relations and connections between all the fields that intersect and overlap. . . . [T]he skills of synthesis and systemic thinking are not just luxuries, they are invaluable. . . .

Higher education must raise the important issues and guide students in synthesizing responses, if not answers. . . . Colleges must develop strategies to enable their faculty members who are steeped in different disciplines, to have opportunities for multi-disciplinary work as they continue their own lifelong learning. . . . We must also help students gain knowledge of multiple disciplines and their interconnections. Team teaching is the obvious way to do that. . . . A reform agenda must also include a balance between specialists and generalists . . . trained in the humanities, sciences and social sciences, who can help create a common discourse. The challenge for higher education, then, is . . . the integration and synthesis of compartmentalized knowledge. On our campuses, we must create an intellectual climate that encourages faculty members and students to make connections among seemingly disparate disciplines, discovering events and trends—and to build bridges among them that benefit the understanding of us all. (Gregorian, 2004, pp.12-14)

There are several factors that have accounted for this recent recognition of the value of interdisciplinary undergraduate education. First, there is a growing criticism of traditional higher education, not least of which is directed at large state universities, for failing to deliver a quality undergraduate educational experience. In *Beer and Circus* Murray Sperber (2000) described a process of "education triage" whereby large public research universities spoon-feed and shortchange undergraduates via large classes taught by Teaching Assistants, whose tuition dollars and per-student state appropriations fuel "Big-time U's" push for prestige, achieved by the "Honors Program/College" that serves at best 5% of the student body. These institutions' admissions advertising features the exceptional few students who are freed of the routinized 300-600-student note-taking lectures that are the daily fare for the average Big-time U student. As reflected in recent media revelations, senior university administrators at some large research universities, such as the University of Arizona, have recognized that there are many resources going into the "arms race" to attract students by expanding facilities and on-campus attractions, but far less going into the academic side of university undergraduate education, and very little with regard to effective outcome measures (PBS, 2005). This has resulted in a mutual indulgence pattern that has faculty avoiding taking the steps to stretch and challenge students since doing so detracts from their own research, and has students "getting by" with minimal work to achieve an acceptable 3.0 GPA,

with the resulting grade inflation that this mutual accommodation produces (Merrow, 2004; PBS, 2005). In contrast, IDS programs are typically taught through small classes with instructors using problem- or issue-focused active learning pedagogy.

This suggests a second reason for the growth of students in IDS programs which, in contrast to regular disciplinary departments, embody honors-type features (Table 2: List of 20 Core Features of Quality Integrated/Interdisciplinary Programs) that are acknowledged to be the most effective cluster of ways to educate and retain undergraduate students as engaged active learners (M. Sperber, 2000; Maun, Evans & Henry, 2005).

Third, while accrediting agencies nationwide are increasingly forcing traditional disciplines to abandon their complacency and get serious about outcome assessment, IDS programs have experience in connecting pedagogical practice and students' successful learning. Out of the necessity of accountability, many are intrinsically designed to incorporate feedback that enables such programs to grow and change in effectively serving student learning needs. In part this is because interdisciplinarity is explicitly about a method of knowledge production and the effectiveness of the learning experience, whereas for many disciplines the method of teaching is secondary to students gaining a substantive knowledge of the field. Indeed, the Association for Integrative Studies has an explicit commitment to outcome assessment rarely found in disciplinary-based professional associations and more typically left to the mandates of accrediting agencies.

Fourth, the rapidly changing American workplace has highlighted the limits of traditional disciplinary-based education. Workplaces need people educated, generally, in a wide range of disciplines, who know how to integrate knowledge across those disciplines, and how to apply that knowledge to complex problems and issues. Workplaces also need to have employees who are flexible with a wide range of knowledge and skills that can be adapted and enhanced through specialized training, as jobs change. Critical thinking skills are also increasingly seen as important; today's employees are expected to question failing practices and to come forward with creative suggestions to improve processes and products. Interdisciplinary studies degrees provide undergraduate students with the competencies to critically challenge, and synthesize new solutions rather than merely provide formulaic responses (Gregorian, 2004, pp. 12-14). At the same time, service learning and experiential learning, once seen as too practical for college, are increasingly valued by employers and recognized as essential components in

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│               Table 2: 20 Core Features              │
│    of Quality Integrated/Interdisciplinary Programs  │
│                                                      │
│    1.  Student centered/empowering                   │
│    2.  Programs have small class size (under 20)     │
│    3.  Class held in seminar/discussion format       │
│    4.  Students interpret, articulate and refine     │
│        their ideas                                   │
│    5.  Students are active creators/generators of    │
│        perspectives/knowledge                        │
│    6.  Students explore topics from an               │
│        interdisciplinary perspective                 │
│    7.  Students conduct independent and              │
│        collaborative research                        │
│    8.  Students develop toward intellectual          │
│        maturity, even as future faculty              │
│    9.  Programs draw on full-time faculty who are    │
│        typically award-winning teachers              │
│   10.  Students work personally with/for faculty on  │
│        their research projects                       │
│   11.  Programs develop students' fundamental        │
│        critical literacy skills: oral, written,      │
│        reading comprehension, math, computing and    │
│        critical thinking as an ongoing process       │
│   12.  Students engage in learning communities       │
│   13.  Students have the option of special           │
│        segregated quiet (honors) housing             │
│   14.  Students engage in experiential and service   │
│        learning                                      │
│   15.  Students culminate their degree program with  │
│        a senior seminar/mini thesis                  │
│   16.  Programs provide superior one-on-one          │
│        advising and personal faculty mentoring       │
│   17.  Students enjoy special, quiet places to study │
│   18.  Learning centers/lounges are available for    │
│        informal discussion lunches                   │
│   19.  Students have extended library and loan       │
│        privileges                                    │
│   20.  Students are offered special lectures and     │
│        events to promote engagement                  │
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a transdisciplinary integration that values different kinds of knowledge, not all of which is generated from academia. (See, for example, the Bachelor's of Integrative Studies at George Mason University's New Century College, which has a strong service learning component.)

Fifth, at a more abstract level, there has been a recognition that the postmodern challenge to modernity has collapsed traditional boundaries and borderlines established through modernity, and that, "[i]n recent decades, not surprisingly, the autonomy of many academic disciplines has given way to . . . an era of interdisciplinarity" (Leitch & Ruiz III, 2005). However, the crossing and blurring of disciplinary boundaries that interdisciplinarity fosters (Klein, 1996) has, as we shall see later, not changed the basic distribution of power and knowledge relations, and has invoked a disciplinary backlash that seeks to vilify postmodernism and interdisciplinarity alike (Sokal, 1996; Sokal & Bricmont, 1998; Readings, 1996).

In summary, then, deficiencies in disciplinary based undergraduate education have led to interdisciplinary approaches becoming increasingly attractive to students, educational policy makers and employers. It is not so much that interdisciplinary undergraduate education wants to abandon disciplines. Rather, it wants to connect them, avoid their classical presumption of superior knowledge over other disciplines and fundamentally embrace their depth of enquiry without simultaneously sacrificing this to the friction created by knowledge fragmentation and what Sayer (1999) describes as disciplinary imperialism. What IDS offers is a way to harvest the depth of disciplinary knowledge while *also* moving dialectically across disciplines, noting areas of commonality, areas of difference and providing a holistic framework for further analysis. Consistent with affirmative postmodernism, it seeks to empower through bringing together the multi-vocality of disciplinary voices/knowledge, acknowledging the contingency of their truth claims, challenging the hegemony of their power to explain, but recognizing the potential that the dialectical integration has for transformation, understanding and comprehensive explanation (for an application of this holistic integrative postmodernist approach to the undergraduate teaching of criminology and the problem of crime, see Henry and Milovanovic, 1996; 1999; Barak, 1998).

2. New Visions of Science and Funding Priorities for Research

Recently it has been recognized that in addressing complex problems, disciplines and the structure of universities provide limited frameworks,

particularly with regard to innovation. Stephen Rowland has captured well the basic challenge of interdisciplinarity to the disciplines:

> The most exciting ideas are often to be found when we cross disciplinary boundaries. Universities have been criticised for not being very good at that: for concentrating on questions which arise within our own disciplinary territories, rather than with the problems of others or of the wider world. In a context of teaching and research which is governed by utilitarian principles and economic imperatives, the pressure to engage and cross these boundaries is increasing. Interdisciplinarity . . . is again fashionable. (Rowland, 2003)

A significant shift reflecting this concern also occurred in government thinking about the way science research should be conducted. The view of Elias Zerhouni, the Algerian-born director of the U.S. National Institutes of Health, is that we need a new roadmap to understand society's complex problems and, in particular, that we need to re-engineer the future clinical research enterprise toward interdisciplinary integration and public/private partnerships (http://nihroadmap.nih.gov/overview.asp). This view, and the recognition of institutional resistance to these new directions, was echoed by the American Association for the Advancement of Science's CEO Alan Leshner on "Science at the Leading Edge" in the magazine *Science* (2004, February 6):

> [N]ow many of our papers involve teams of scientists from many specialties, bringing diverse expertise to bear in an integrated rather than parallel way. The fact that interdisciplinarity characterizes so much of today's most exciting work may portend the demise of single-discipline science. . . . My greatest concern is that our scientific institutions are not well positioned to promote the interdisciplinarity that characterizes so much of science at the leading edge. (2004, p. 729)

Indeed, these and similar revelations came together in a report by the U.S. National Academies of Science (2004), which called for interdisciplinary research in order to address increasingly complex social problems whose solutions are not confined to single disciplines.

Some disciplines have not been slow to see the implications of this "paradigm shifting strategy." For example, in an editorial in the March 2004 newsletter, *Footnotes*, Sally Hillsman, the executive officer of the American Sociological Association, ponders the obstacles to interdisciplinarity in

the silos of the academy's disciplinary roots: "How to create more flexible scientific environments, infrastructures, and cultures to accommodate the changes that are coming is an important challenge that will affect academic institutions, departments, reward structures, training programs, funding streams, peer review, scientific lifecycles, and even professional associations" (Hillsman, 2004, p. 2).

As noted earlier (Schindler & Henry, 2003), one implication of this shift in funding priorities is a revisiting of the "value" of interdisciplinarity by grant seekers from the traditional disciplines. As a result, disciplinarians working together on joint projects will not only institutionalize the "discipline first" principle of disciplinary working ("To be interdisciplinary you need to be disciplinary first—to be grounded in one discipline, preferably two, to know the historicity of these discourses before you test them against each other" Foster, 1998, p. 162), but will also redefine major and authoritative definitions of standards for interdisciplinarity. Given the relationship between discipline, knowledge and power (J. Moran, 2002), whereby university selection committees, grant review committees and peer reviewers are drawn largely from the established academic disciplines, these redefinitions of interdisciplinarity are unlikely to be influenced by those currently in interdisciplinary units. While there are, certainly, examples of established interdisciplinarians being invited onto review teams for the new wave of interdisciplinary proposals, as we will see below (section on the symbolic threat, especially Dan Sperber, 2003), the rhetoric of interdisciplinarity is often ultimately compromised to disciplinary interests (see also Trow, 1984/85, p. 14, on the dominant power of disciplines in organizing and controlling knowledge production, organization and education).

3. Growth of Multi- and Interdisciplinary Research

Not surprisingly, this shift in priorities by funding agencies has led to an increase in an already growing use of multi- and interdisciplinary approaches to research. As Julie Thompson Klein states, in the 1980s and 1990s such "instrumental interdisciplinarity" that focuses on information technology, and economic and technological problem solving, "gained heightened visibility in science-based areas of international economics such as computers, manufacturing, biotechnology and biomedicine . . . where interdisciplinarity serves the political economy of the market and national needs" (Klein, forthcoming, p.16; 2005b). Similarly, there has been recognition of new fields of inquiry that bring together a variety of disciplines such as environmental and ecological studies, cognitive science,

urban and policy studies, crime and justice studies (Klein, 2005a). Indeed, in her review of the National Academies (2004) report on *Facilitating Interdisciplinary Research,* Klein (2005a) states:

> Over the latter half of the twentieth century, the profile of inter-disciplinary research (IDR) heightened and it attained a new plurality . . . Many key topics today are interdisciplinary, prominent among them nanotechnology, genomics, bioinformatics, neurosciences, conflict and terrorism. Many significant accomplishments are products of interdisciplinary inquiry and collaboration, including the discovery of the structure of DNA, the Manhattan Project, laser eye surgery, human genome sequencing, the green revolution and human space flight. (2005a, p. 4)

She highlights the report's explanation for this development in the inherent complexity of society, a problem-solving rather than discipline-serving orientation, a need to solve societal problems and harness the power of new technology (National Academies, 2004, p. 2; Klein, 2005a, p. 4).

As this growth occurred in interdisciplinarily-framed research, debate among interdisciplinary scholars focused on the substance of how IDR was conducted and what it was attempting to achieve. Apart from the debates over whether there was an ideal model of interdisciplinary research (Newell, 2001), interdisciplinarians took issue with whether the "instrumental approach," in which interdisciplinarity was designed to handle problems of complexity, should define the limits of the justification for interdisciplinary research, or whether this should be expanded to include the use of insights from multiple disciplines, and even to provide a more comprehensive understanding (Miller, 2005, p. 5; Newell, 2005). Indeed, this question also relates back to the rationale for interdisciplinary undergraduate education which, when framed merely as "problem solving," can appear more geared to career development than education. As Castellana comments, "The purpose of an interdisciplinary education is not solely to *train* problem-solvers, it is also to *educate* students to become clear and critical thinkers, to become public-minded decision-makers, and to become responsible citizens who are capable of holding the decision-makers in check. It is an education in the values and ideas of a liberal, civil society" (2005, p. 3).

Given this apparent increased presence, legitimacy, and real-world relevance of interdisciplinary studies and research, how is it possible for IDS and IDR to be under attack? Why are some IDS units, in particular those in the context of public university higher education, experiencing reduced budgets (Wayne State University), dispersal of their programs into traditional arts and sciences colleges (such as at George Mason, Alabama-Tuscaloosa and Wayne State University), absorption into existing honors college programs (School of Interdisciplinary Studies at Miami University, Ohio), potential closure (Appalachian State University), and in some cases total elimination (Arizona International, Interdisciplinary Social Sciences at San Francisco State University)? In order to address this issue it is necessary to place the development of IDS/IDR in the context of the changing environment of higher education and in the changing place of traditional liberal arts disciplines, which are striving to maintain their position in academia in the face of growing budgets for science, technology and medicine. The attack on IDS is driven by money, demographics, and the reduced role of liberal arts in the research university. The attack can ultimately be explained by the fear of loss of legitimacy, by disciplinary hegemony, by a backlash against attempts to curb disciplinary power, and by the strategic decision to take advantage of the current interest in interdisciplinarity by absorbing aspects of it into disciplines.

Disciplinary Hegemony

Disciplinary hegemony is embodied in disciplinarity: "the systematization of knowledge into discrete, specialized, hierarchical domains" which was "strengthened in the Enlightenment, both by the emergence of modern scientific specialisms, and by the Enlightenment mania for the classification and codification of knowledge into encyclopedic systems. . . . Disciplines, therefore are about power, hierarchy and control in the organization of knowledge" (Moran, 2005). In his analysis of sociology as a discipline, Ben Agger (1991) coined the term "disciplinary hegemony" to describe the assumptions that produce a dominant "positivist quantitative" sociological paradigm that excludes "genuinely heterodox work of a kind that seriously challenges the literary production of the disciplines" (1991, p. 24).

The increasing value of interdisciplinarity, according to Moran (2005), cannot be understood outside its relationship to disciplinarity and the politics of university power/knowledge relations. In England this has seen the interdisciplinary challenge not only from "marginalized dissidents in scholarly life," "the intellectually creative, the rebellious and idiosyncratic" but also from "the very seats of institutional power . . . as a legitimizing ideology for very different constellations of interests." Moran includes among these: university "managerial elites . . . who have emerged to run individual universities and the university system" who find disciplinary hierarchies "powerful obstacles." He says,

the hegemonic ideology of scholarly quality, reinforced by self-validating mechanisms of peer review, can make the most successful academics virtually independent of managerial authority. . . . In these circumstances interdisciplinarity, by offering both an ideological and an institutional challenge to disciplines, provides also a strategy for countering disciplinary power. It is a way of attacking the baronies that are so often the despair of academic managers, and of creating . . . institutions that are more pliable than old-fashioned disciplinary departments. (M. Moran, 2005)

According to Moran, the rise of interdisciplinarity has also been employed as a strategy by declining disciplines that have lost their cultural foundations as a way for them to reinvent themselves, by disciplines suffering the exhaustion of the historical projects that once gave them life, and as a means for new generations of young scholars to make a mark. Thus, the rise of interdisciplinarity must be understood in relationship to the success of disciplinary hegemony, "as a strategy that potentially solves problems faced by many different interests" (Moran, 2005; see also Readings, 1996; Foster, 1996; Moran, 2002).

This political use of interdisciplinarity has occurred at a time when disciplines have witnessed an economic challenge, especially in state-funded institutions, which has had the effect of stimulating disciplines to reassert their control over the political challenge from these threatening interests.

The Economic Challenge from Reduced State Income and Increased Student Enrollment

During the last five years following the boom of 1990s, there has been a crisis in funding for public higher education in the United States. Nationwide state budgets have been shrinking and running deficits. State tax revenues fell 10% from 2000-2003, and although state tax revenues began to turn around in 2005, the cuts to universities from the earlier deficits have not been restored (*The Chronicle of Higher Education,* 2005). The effects of decreased funding on university systems in states like California and Michigan have been drastic, causing program cutbacks and college mergers. For the 2004-05 Michigan's public universities received a $30 million reduction in their budget. In Virginia, in spite of Governor Mark Warner's restoring of some of the lost revenue to state universities, budgets for operating expenses declined in 2003-04 by 5.7%, although the 2005-06 allocation was increased by 9%

above the allocation for 2004-05 (*The Chronicle of Higher Education,* 2005). The impact of these deficits is illustrated by looking at the case of Virginia where there have been cutbacks in general fund appropriations per in-state student, which, for example, at George Mason University declined from $7,208 in 2000 to $5,289 in 2004, slightly better than the $5,018 in 2003, but 27% below their 2000 level (Hebel, 2004).

At the same time there has been a growth in enrollment, an improvement in retention, and an increase in time to graduate from five to six years, all of which results in more students on campus. Staying with the example of George Mason University (which houses New Century College's bachelor in integrative studies degree) there has been a 25% increase in undergraduate applications over four years, up from 11,905 in 2000 to 14,875 in 2003, and these are students with increasingly higher GPAs and SATs. Finally, one-year retention rates at GMU have increased from 75.6% to 82.2%. This increase has come as a result of an increase in the numbers graduating from high school. Overall, for example, the Virginia high school graduation rate is projected to grow by 16.2% through 2009 before reaching a plateau. The result of these changing demographics means that classes are full and space is at a premium (Hebel, 2004). This is a pattern repeated at many public universities in the United States.

In attempting to deal with this confluence of declining budgets and increasing enrollments, state universities have started to look at cost effectiveness. This means that they want larger classes and less seat time through using online and distance learning delivery modalities, and through a variety of linkages with community colleges and high schools. Moreover, as Trow pointed out, once interdisciplinary studies programs become regularized as conventional units within the university they are expected to demonstrate traditional cost structures, rather than the preferential ones that they often received as innovative, experimental programs: "There are enormous leveling pressures in multi-unit institutions: legitimacy requires equity, and in many such institutions marked differences in *per capita* support among departments are defined as inequalities, and inequalities as inequities" (Trow, 1984/85, p. 9).

In this context, the IDS programs, with pedagogically desired small class size, team teaching, and learning communities, may seem like an expensive luxury; they do not even have the "loss leader" value of being an honors college, and they have the oft referenced stigma and perception that they contain "students who couldn't get into other programs and faculty who didn't get tenured positions in regular departments." Some of the ways these programs have been

handled by university administrations that are shaped by disciplinary norms are: (1) cut IDS programs budgets, (2) starve them of faculty resources, (3) remove class size caps, and (4) move them into larger colleges, typically liberal arts and sciences. Here it is claimed, they can serve the functionally catalytic role of stimulating traditional disciplines to talk with each other, serving as a model for effective teaching and active learning in-house, which avoids the cost of faculty development. One of the ultimate dilemmas faced by IDS units is that, since they are interdisciplinary, any other faculty can teach in their programs; therefore, increased faculty lines at a time of economic and demographic pressure are less likely to follow increased enrollments, although there have been instances where tenured faculty who do not fit traditional departments after reorganization are "dumped" into interdisciplinary ones, which is often a reflection of the contempt/misunderstanding that university administrators have of interdisciplinary studies.

The Symbolic Threat to Traditional Disciplines and Their Reassertion of Disciplinary Advantage

Second, and not insignificantly, there has been a shift in emphasis in public research universities toward "big science" and, as Stanley Katz (2005) says, the resultant structural marginalization of undergraduate liberal education that he describes as "a project in ruins." This phenomenon has also produced a competition among liberal arts departments for a share of the diminishing budget and general education courses. Katz is concerned over "the extent to which structural changes in the . . . research university tend to marginalize undergraduate education generally, and, more important, make it difficult to theorize and put into effect anything like liberal education."

As liberal arts become marginalized, it becomes increasingly difficult for its disciplinary constituents to acknowledge, let alone celebrate, those experiments in interdisciplinarity, which are seen as one more threat to its existence. This situation is further complicated by the attacks on the value of disciplinary universities from those like Becher (1989) and others sympathetic to interdisciplinary approaches:

> Over the last thirty years or so the power of professional and disciplinary authority have been seriously questioned. Some . . . suggest that the disciplines are an increasingly irrelevant mode of knowledge production more geared to the concerns of academics to create and solve their own problems, than to engage with the world

outside. Academic disciplines, with their own protective tribes and territories (Becher, 1989) do more to preserve their own élites than contribute to social development, it has been said. In contrast, the terms 'transdisciplinary' and 'multidisciplinary' have been used to describe a new organisation of knowledge which is geared to the solution of practical problems, by overcoming disciplinary boundaries and drawing upon different fields of expertise. (Rowland, 2003).

Andrew Sayer (1999) has similarly argued that,

> disciplinary parochialism and its near relative disciplinary imperialism are a recipe for misunderstanding the social world, characteristically resulting in reductionism and various forms of blinkered interpretations and misattributions of causality. . . . It encourages academics to emphasize not what is relevant and important for understanding social phenomena but whatever promises to raise the profile or educational capital of their discipline. . . . Disciplines are parochial; they tend to be incapable of seeing beyond the questions posed by their own discipline, which provide an all-purpose filter for everything. Where the identity and boundaries of a discipline are strongly asserted and policed, it can stifle scholarship and innovation. . . . Disciplines are also often imperialist; they attempt to claim territories occupied by others as their own. Disciplinary imperialism is closely related to disciplinary parochialism because both have difficulty thinking outside the framework of a single discipline. Disciplinary parochialism and imperialism are evident in the tendency for accounts of the world to be assessed not merely in terms of their explanatory adequacy, but in terms of the extent to which they further the aims and favoured tropes of the discipline.

The result of these varied attacks has been a closing of ranks by traditional liberal arts disciplines, which has occurred in a number of ways and at different institutional levels.

First, when interdisciplinary studies units are located in a disciplinary college, the 25-year old arguments raised by Benson (1982) are readily reinvented by disciplinarians competing for diminishing resources. It is claimed that IDS programs are flawed because: (1) they are conceptually confused; (2) pedagogically, interdisciplinarity should follow, not precede disciplinary competence; (3) interdisciplinarity before disciplinarity will

impede the latter's development; (4) interdisciplinary courses are shallow, trading rigor for excitement; (5) interdisciplinary courses are costly because of team-teaching and small classes. Jerry Petr's observation of 20 years ago has renewed resonance in disciplinary colleges and especially among administrators caught in the current budget-demographics crunch of 2004: "Nationwide, interdisciplinary programs appear to many as expendable frills in higher education, in part at least, due to the predominance of the Benson arguments in the court of (academic) public opinion" (1983, p. 21). This is in the face of the reality that many such programs have long survived on a minimal budget with no more than a few dedicated faculty and advisors, and have often relied on classes taught by sympathetic faculty in disciplinary departments and willing part-timers.

Leitch (Leitch & Ruiz III, 2005) has argued that interdisciplines seek to directly challenge modernism and particularly "the idea of the university as a serene ivory tower, organized and disengaged." He says that whereas they "struggle against the hegemonic order, have activist roots" and "engage in community outreach" they still submit to modern disciplinarity, its requirements, standards, certifications as well as its methods (exercises, exams, rankings, supervision, norms)" (Leitch & Ruiz III, 2005). Indeed, what superficially looked like a postmodern challenge to traditional mainstream liberal arts disciplines from interdisciplinarity may ultimately be absorbed by the academy which remains a disciplinary institution. For as Leitch has observed, while the autonomy of many disciplines has imploded, "the university, a throwback modern institution, finesses the eruption of difference and the proliferation of new interdisciplines by shoring up traditional departmentalization occasionally softened by a Humanities Center here and some modestly funded and volunteer-staffed interdisciplinary programs there" (Leitch & Ruiz III, 2005). As a result, rather than bringing about significant change in pedagogy, theory, or organization of academia:

> The departmental structure of the American college and university looks pretty much today the way it did a half century ago. So too does the job market, a great respecter and enforcer of established disciplines. Postmodern interdisciplines are generally housed in underfunded and nomadic programs or institutes, not departments. So we live in a time of limited and constrained interdisciplinarity. Postmodern implosion thus far has been a partial, a limited phenomenon: nation-states and borders continue to operate; private

and public spheres are distinguishable still; the arts remain distinct and recognizable; traditional disciplines retain autonomy and power. (Leitch & Ruiz III, p. 2005)

Some of the ways this hegemonic resistance is played out can be seen in works of those who have described and theorized about the process of doing interdisciplinary research and collaboration in science and applied science. In reflecting on his involvement as an interdisciplinarian in the field of cognitive science, Dan Sperber (2003) describes how research that falls across disciplines meets obstacles and "can be construed as challenging the dominant disciplinary organization of the sciences." He points out that, while funding agencies encourage interdisciplinary grant proposals, what often appears before the multi-disciplinary team of reviewers are mono-disciplinary proposals that contain underdeveloped "cosmetic interdisciplinarity . . . done in order to meet the criteria of the grant." Sperber says that the disciplinary representatives funding these proposals tend to vote for the better-developed disciplinary proposal over the genuinely interdisciplinary ones, with the hope that the interdisciplinarity will develop during the project, but he asks:

> What kind of a comedy is this, where we are pretending to fund novel, interdisciplinary research, when, in fact, there is very little funding for interdisciplinary teaching and training in the first place? How likely is it that outstanding interdisciplinary proposals emerge in such conditions? And aren't most of my colleagues on the committee quite content with this state of affairs, which allows disciplinary business to go on as usual at the cheap price of some interdisciplinary rhetoric? (D. Sperber, 2003)

Sperber describes disciplinarians who engage in interdisciplinary work as often expecting the other disciplinarians working on the project to recognize the superior qualities of their own disciplinary contribution. However, these disciplinarians do not recognize their own discipline's deficits in light of the other disciplinarian's contributions, which is a form of mutual myopia. He explains that different disciplines engaged in interdisciplinary work, "have different vocabularies, presuppositions, priorities, criteria, references," and he states:

> In general different disciplines have different sub-cultures, and the difference is made worse, not attenuated, by the existence of superficial

similarities, for instance identical words used with quite different meanings. . . . Because issues seem to be shared by two disciplines, scholars from each may seek, or at least welcome, interdisciplinary exchanges. More often than not, their expectation is not so much that they will learn much from the other discipline; it is that people in the other discipline can and should learn from them. (D. Sperber, 2003)

Indeed, Rowland (2003) argues that genuine interdisciplinary work requires us to move outside of the familiar subcultures, language use, and meanings associated with our disciplines: "Crossing disciplinary boundaries therefore involves an unusual kind of listening: a listening that is prepared to hear the familiar as strange; a listening that is prepared to withhold immediate judgement, and that understands the slipperiness of language when it is put to work in unfamiliar contexts."

Dan Sperber argues that discipline-based interdisciplinary research does not meet the challenge. He describes the vicious circle of disciplinary reproduction where, premised on the argument that interdisciplinary study should *follow* disciplinary study, young scholars are dissuaded by their disciplinary supervisors from engaging in interdisciplinary research projects until they have first qualified for and obtained positions in their disciplinary field, with the result that interdisciplinary training is always denied, deferred and undermined:

> Postponing interdisciplinary work to the time a researcher is well established means that such research is generally pursued as a side activity, with more goodwill than thorough competence, and that therefore, indeed, it will be much harder for a student to find proper supervision in an interdisciplinary than in a disciplinary area. Even more generally, this means that the inventiveness and creativity of younger scholars is discouraged from going into interdisciplinary work, slowing down this work, making it intellectually and practically less attractive. (D. Sperber, 2003)

In their interdisciplinary research on natural resource management, Rogers, Booth and Eveline (2003) take the argument of disciplinary hegemony further by applying a feminist-influenced analysis to the hegemonic practices of the disciplines. Using Mary Douglas' framework of purity and danger, they claim that the "purity" of disciplinary work, with its inherent privileges and advantages, is maintained by mounting a continual defense to neutralize the danger from what is perceived of as the "dirt" of interdisciplinarity. They describe the management of this threat through the use of discursive techniques that control the representation of interdisciplinarity. In the manner of de Certeau's (1984) strategies of exclusion, by which undesirable elements are placed as the "other" by dominant and powerful disciplinary interests, they describe a practical ideology in action that employs strategies that draw discursive distinctions and value some aspects over others, that are then devalued as inferior, ineffective, or insignificant. Rogers, Booth and Eveline (2003, pp. 9-15) draw directly on Plumwood's (1993) five interrelated denunciation strategies that together constitute an "otherization" process, and apply these to show how the disciplines disarm the threat of interdisciplines. These strategies are: (1) backgrounding or denial, (2) incorporation or co-optation, (3) instrumentalism by means of objectification, (4) radical exclusion by hyperseparation, and (5) homogenization or stereotyping.

Backgrounding not only reinforces the distinction between disciplines and interdisciplines, but also normalizes the hierarchical priority of the former over the latter:

> Backgrounding . . . naturalises a hierarchical order—in this case the primacy of discipline over interdisciplinary endeavour. Even in this discussion, the term "interdisciplinarity" is constructed as a product of the disciplinary economy. The etymology of the word suggests as much. . . . [R]eading interdisciplinarity as a practice going beyond established boundaries does not reveal disciplinarity as a dispersed network of locally produced practices, mythologies, and artifacts. It simply reinforces the image of discipline as a coherent and primal unit of analysis. (2003, p. 10)

Incorporation refers to defining the other, in this case interdisciplinarity, in relation to the master, disciplinarity, such that interdisciplinarity is always dependent on the primary disciplinary unit, filling in gaps, developing alternative skills, living between the gaps, but "obscuring the independence of the interdisciplinary method":

> Constructing discipline as the proto-typical model for any legitimate attempt at generating knowledge enables the "master" to undertake a second project of threat abatement. This involves creating a discursive form which highlights the primacy of disciplinary activity. It is common among both interlopers and disciplinarians to begin a defence or rejection of interdisciplinarity with the categorical insistence that discipline breathes life into the possibility of interdisciplinary study. In its strongest formulation, this argument asserts the primacy of

discipline as a resource for innovative study. But even defences of interdisciplinarity targeted as a rejection of this logic often do no more than reinscribe its dominance. (Rogers, Booth & Eveline, 2003, p. 10)

Instrumentation refers to the maintenance of disciplinary advantage "by appropriating interdisciplinarity as a resource for supplementing normal science in abnormal situations" (2003, p. 11). Again, interdisciplinarity is denied autonomy by being made an object in the wider disciplinary schema, reduced to an instrumental appendage, to solve anomalies to the discipline: "Here, interdisciplinarity is not presented as a challenge but as a complement to disciplinary method. The interloper is a resource for the disciplinary project" (2003, pp. 11-12).

Radical exclusion involves discursive separation of interdisciplinary work as fundamentally different from disciplinary work:

Interdisciplinary scholars are treated as, at best, a distraction from the main "game." They might be recognised, but not as sharing similar concerns and valuing the same projects. . . . [W]ithin the contemporary disciplinary framework, there is no clear way of articulating what the interdisciplinary worker is interested in. . . . An interdisciplinarian is frequently using the tools but not playing the game. This is why some people will tend to shy away from interdisciplinarity. It can mean exile from established communities. Under the current regime, there is no warm reception, and to be interdisciplinary you either need a thick skin or a sufficiently rich history. Either way, the interdisciplinary researcher is likely to be labeled an "outsider." (2003, p. 13)

Homogenization is the process of labeling and stereotyping the other, in this case interdisciplinarity. Because there is no adequate framework within the disciplinary sphere to describe what interdisciplinarians do, they are seen as outside, "otherised" or "them" rather than "us." In Becker's (1963) terms they are "outsiders" subject to negative labeling, not because of anything intrinsic about their qualities, but because of the qualities the audience (in this case disciplinarians) ascribes to them:

[W]ithout a way to locate their projects, it will seem as if interdisciplinary workers hold an amorphous set of interests devoid of a unifying theme. The inability to easily describe what such scholars "do" using existing terms of language results in the

ascription of a default identity—one based on nondescriptness. Because interdisciplinarians cannot often be described as belonging to a collective but differentiated "us," then logically they must belong to the black box category labeled "them." (Rogers, Booth & Eveline, 2003, p. 14)

Through these interrelated strategies of exclusion, Rogers, Booth, and Eveline argue that disciplines maintain their disciplinary advantage over interdisciplines. Rather than facilitating an engagement between different disciplinarians and with interdisciplinarians toward an emergent reframing of ways to address problems and issues, disciplinary hegemony works through the application of these strategies of practical ideology "against interdisciplinarity by setting practitioners against one another. Where integration is needed, we find tribal factionalism, the maintenance of discrete positions, and the spectre of relativism" (2003, p. 14). So what can be done?

How Can Interdisciplinarity Best Survive?

In spite of the apparent backlash, it is clear that interdisciplinary studies and interdisciplinary research have already survived (nor are challenges to their existence new; see Trow, 1984/85) and, while under attack, are unlikely to wither away. Instead we are likely to see absorption and co-optation of the kinds described above. The critical question is whether IDS and IDR should collaborate and engage the disciplines, or whether doing so runs the risk that interdisciplinary will become a subordinated dimension of disciplines. Clearly, Rogers, Booth and Eveline believe the latter process is already underway, and that disciplinary hegemony presents a major threat to interdisciplinarity's ability to have its own independent voice. They argue for boundaries for interdisciplinary work, carefully and vigorously controlled; determination of its own criteria for developing an independent method; overseen for methodological and theoretical rigor; development of its own recommendations for practice; and establishment of its own self-regulating guild to administer these self-policing processes. In other words, they call for the disciplining of interdisciplinarity. However, they argue that independence is not enough: "On its own, this functional program does not resolve the question of strategy, however. . . . [I]ts future as a practical project lies in negotiating the material and representational economy into which it is deployed" (2003, p. 15). Yet, rather than invest in the belief of a reversal of hierarchies, they argue that interdisciplinarians

must move with the existing disciplinary structure if they are ultimately to transcend it, but in doing so, they must be aware that discipline is not merely an intellectual academic pursuit but also is institutionally produced through the wider political economy in which it is embedded, and through whose linkages, institutional investment and resource flows it is sustained: "Accordingly, in addition to the question of interdisciplinary method, we require an understanding of how activists of interdisciplinarity might contest the structural determinations of discipline . . . how interdisciplinary work of the future can best play the political game of making a difference" (2003, p. 16).

Clearly, in the United States, the Association for Integrative Studies has already moved in directions that seek to establish methods of how to assess interdisciplinary programs (AIS Guidelines), and its members have established criteria for assessing interdisciplinary writing and learning (Wolfe & Haynes, 2003). Moreover, leading interdisciplinarians have called for the development of interdisciplinary methods (as reported by Welch III, 2003) and have begun to articulate them with precision (Klein, 1990). In this movement, to regularize the practices of interdisciplinarity while maintaining a critical eye on "the political," we are reminded again of de Certeau's (1984) counter to the strategies of exclusion by the disciplines through the practices that he terms "tactics."

> A tactic is a form of "anti-discipline" practised by these undesirable elements from a position of relative powerlessness, "a calculated action determined by the absence of a proper locus" which must "play on and with a terrain imposed on it and organized by the law of the foreign power." (Certeau, 1984, p. 37; J. Moran, 2002, p. 67, commenting on and citing Certeau)

So if we accept, as Moran does, Certeau's point that tactics can never overthrow the strategies of disciplinary hegemony and have to make do with "getting around the rules of constraining space" (Certeau, 1984, p. 18, cited by J. Moran, 2002, p. 67), what are the "subversive 'tactics'" (ibid) that can be used to enable interdisciplinary studies to survive in the interstices of a disciplinarily dominated academic world?

Tactics of Prevention

In what follows I suggest 20 pragmatic tactics that can be used at the local level to preempt the effects of disciplinary hegemony and build the field of both interdisciplinary teaching and interdisciplinary research toward a sustainable rather than marginal place in academia. While many of these tactics focus on interdisciplinary studies programs, they could also be applied to interdisciplinary research.

Advocates for IDS and IDR, and the professional association for the field (AIS) must take on the following responsibilities:

1. Track trends and patterns in interdisciplinary studies, nationally, at the state level, and inside the local institutions.
2. Model the very qualities of pedagogy that IDS uses, not just to students but also to faculty in disciplines and, particularly, to university administrators.
3. Use administrative activities to convince university administrators and colleagues in its host college of IDS unit's value.
4. Demonstrate the relative benefits of effective interdisciplinary instructional programming for students and employers compared with traditional instruction.
5. Expand the bridges and links that exist between interdisciplinary programs and other units in Arts and Sciences, as well as other colleges in the university.
6. Support the creation of university-wide interdisciplinary connections and assist them to create a stake in the continued existence of interdisciplinary units.
7. Develop a plan to increase external funds for interdisciplinary research and programming, by enhancing donor programs, establishing student fellowships, etc., while weighing the costs of loss of control.
8. Create an advisory board of key stakeholders from both within and outside the university. Such a board is critical for providing avenues of influential communication in ongoing exchanges that serve a preemptive role and as a point of strength and support at critical times of crisis.
9. Build up the alumni's commitment to interdisciplinary units via regular alumni annual surveys and through their continued engagement in programs.
10. Develop increased outreach to the community by several means, including establishing partnerships with private and community organizations and increasing articulation agreements with community colleges and high schools. A program of interdisciplinary

courses for senior high school year can develop a future demand for interdisciplinary programming at the college level.

11. Expand online and distance components of instruction as a blended option that is designed to integrate knowledge across disciplines. This component can help demonstrate the synergy among interdisciplinarity, new technology and new media.

12. Investigate the feasibility of off-campus programs and global education programs tied to UNESCO's commitment for lifelong and interdisciplinary learning.

13. Build on the collaboration with external professional associations for interdisciplinarity, and seek out leadership roles in these organizations.

14. Explore options for a semester faculty exchange program with faculty from other IDS programs.

15. Continue to develop the commitment to student engagement through enhanced interdisciplinary projects on campus and through service learning.

16. Develop an online newsletter and an online student-edited journal: *The Interdisciplinarian*.

17. Investigate a writer-in-residence program with an emphasis on writing across the disciplines.

18. Investigate the feasibility of establishing a co-major program as well as developing a master's program that draws disciplines into interdisciplinary studies.

19. Investigate the feasibility of a master's/certificate to teach disciplinarians how to become interdisciplinarians.

20. Establish links with master's and or doctoral programs in interdisciplinary studies at other institutions.

Tactics of Radical Resistance

The tactics above are designed to prevent disciplinary hegemony from absorbing successful experiments in interdisciplinarity, while simultaneously sensitizing the disciplines to the value of what they have excluded in engineering their own constitution. Should these not prove to be effective, or be insufficiently developed, then an IDS unit or an IDR program might be faced with political and economic attempts to downsize, scale back, regularize, normalize or otherwise diminish its viability. These challenges will typically emerge in times of fiscal crisis

for a university, but they might as easily be prompted by other reasons for reorganization. In these circumstances it is often necessary to take more radical action, as we found with the attempt to transform and downsize the highly successful and long-standing Interdisciplinary Studies (IS) program at Wayne State University (WSU), and as was observed in the successful attempt to save the interdisciplinary History and Philosophy of Science (HPS) Department in Budapest. In each of these cases there had been a history of a highly successful program. In the case of IS at WSU, the program had a 30-year history and an annual enrollment of 800 students (combined undergraduate and graduate degree programs). The program survived as the Department of Interdisciplinary Studies, though transferred to the College of Liberal Arts and Sciences, with some faculty and budgetary cutbacks. It defeated an attempt by the Council of the College of Liberal Arts and Sciences to change the name from Interdisciplinary Studies to General Studies; the attempted change was based on the argument that "we all do interdisciplinary studies," and that no one department can own that.

In the Hungarian example, the HPS Department was threatened with dissolution due to financial cuts at the university, in spite of the fact that the department had a very high number of students (over 2,000), had been very successful with grants, and had earned an international reputation in both research and education. As the Department Chair George Kampis pointed out, the challenge was not the result of the department's own weakness, but rather the outcome of an apparently too rapid decision about where to cut back in a moment of university-wide budget problems. The politics of such decision-making relates back to who are "we" and who is the "other." In times of threat, interdisciplinary studies are the other, since the majority of faculty members on governing councils are from disciplinary-based departments. Thus, when the issue arises as to how to distribute cuts, the "other" is sacrificed by the "we." As Kampis wrote at the height of the HPS crisis: "This is a difficult situation in which most decision-makers are reluctant to increase their own losses by introducing a more even distribution of cutbacks, when an easy solution was already in sight" (Kampis, 2005). In these circumstances, one of the most difficult things to decide is the appropriate point at which to move from internal, private tactical practices of attempting to influence decision-makers to external, public ones that put direct pressure on them. Turning to public tactics too soon can be counterproductive; too late can be futile.

The following tactics were employed in the IS and HPS cases:

1. Mobilized current students, alumni and friends of the program to write letters and petitions supporting the program and pointing out its value to their careers and lives.
2. Established relations with supportive faculty on faculty council, university-wide and with selected members of the Board of Governors/University Council.
3. Solicited support from external program reviewers, professional associations and prestigious national and international scholars who have worked with the program.
4. Established a "situation room" web site, giving frequent updates on developments.
5. Built on and developed storylines with journalists working for area newspapers and local campus newspapers.
6. Built on and established relationships with local and state politicians who have responsibility for representing the city and state in which the unit is located.
7. Hosted public forums to which the community, university and politicians were invited along with members of the media.
8. Presented a list of core protections required for the unit to accept transfer/reorganization.
9. Maintained a dialogue with the university administration, suggesting possible ways to bring a resolution.
10. Prepared to enter resolution negotiations when a viable sustainable future was a likely possibility.

Reflecting on the outcome of the process in Budapest, George Kampis writes:

> The contribution of the international scientific community who have been supporting our fight, and of our own students in Budapest has been critically important. It was topped by a (national as well as international) media presence that increased sympathy. For our petition we received more than 500 support signatures from international colleagues and more than 1100 student signatures (of which 500 are on paper). International support has included voices of the most senior members of the PS and HPS scientific community, as well as voices of such eminent non-(H)PS members as Sir Roger Penrose and several others. The petitions and signatures are available from http://hps.elte.hu. . . . We live in a period when money has a . . . too direct effect on universities. At least this is so in Hungary.

This easily generates the paradox that it is profitable to close down successful departments. Only gain is worth distributing, loss is not. . . . This is a fairy tale of earthly resurrection. . . . The success is the work of several people. Various pressures, offers, understandable and less understandable difficulties did not distract them (or me) from continuing the fight. Luck is always an element of success, but the main factors, I guess, were external support, students' votes, persistence, and powerful local supporters, especially in the end phase. . . . This closes the case as for now. Recently we keep hearing about several similar cases. One common factor worth of general attention is that money and local politics often interferes with student interests and scientific excellence in lack of a reliable task analysis and quality assessment system in higher education, the establishment of which would be urgently needed.

Finally, as indicated in tactics 9 and 10 above, it is important to consider the point at which to negotiate a compromise. Continuing the tactics of resistance in the hope of a complete overthrow of the existing system is sure to result in failure; compromising at the optimum time that will preserve sufficient program integrity to provide a sustainable future is a desirable goal. Even then disciplinary hegemony threatens to undermine the interdisciplinary other by attrition and "business as usual," each of which can drain the life of a program, undermining its integrity and the morale of its faculty and staff in the long term. However, by engaging the university with the everyday practices of interdisciplinarity from the inside, in spaces created by getting around the rules and conflating existing boundaries, the whole is transformed by the parts it has seemingly absorbed.

Conclusion

I began this paper by considering the vulnerability of interdisciplinary teaching and research from a variety of interested academic power elites that practice disciplinary hegemony and organizational politics to render the practices of IDS and IDR as contested terrain. I argued that in the recent era of interdisciplinary ascendancy this vulnerability has been heightened, precisely because it represents a challenge to disciplinary hegemony at a time when traditional liberal arts disciplines are under attack for their ineffectiveness, inflexibility, narrowness and lack of relevance. Simultaneously, interdisciplinarity has moved beyond the buzzword of possibility and outgrown its welcome as an experiment on the margins, to

now be perceived as both a growing reality sustained by a corpus of invested faculty and as a prospective source of innovation for addressing complex issues and problems by funding agencies. As such interdisciplinarity has come to represent both a direct challenge to disciplinary hegemony and an indirect weapon for opportunistic university administrators in an era of the growing corporatism of universities to wrench power and control from the dominant disciplines. I described a series of strategies of disciplinary hegemony that have been used to defeat the challenge from interdisciplinarity. Finally, I suggested a series of preventive and resistive tactics against these strategies derived from the experiences of those in threatened IDS and IDR programs that have enabled their interdisciplinary programs to survive disciplinary attempts to undermine them. Whether these tactics will be sufficient to enable the long-term sustainability of interdisciplinarity within academia, or whether they mark the dawn of co-optation, absorption and regularization, remains to be seen.

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