

Multidisciplinary

The Renewal of the University and Its Curriculum

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The American university, as an institution, developed hand-in-hand with the rise of the professions in the late nineteenth-century. In this talk, I will open by contrasting the usual account of this history and then turn to the ‘real’ story of what actually happened: the bargain that was struck segregating humanistic and disciplinary perspectives. I will then outline the consequences of this bargain in problems we routinely struggle with— problems of everyday teaching, learning, and research. I then introduce the concept of multidisciplinary as an alternative to professionalization. We look first at the concept itself and then at how it can play out in practice and in teaching. Finally, I describe the serious challenges to multidisciplinary, challenges in the structure of our institution, in our everyday practices, and in our personal identities. I conclude, nevertheless, by stressing the importance of meeting these challenges, of the fundamental need to repair the social contract between university and society, to heal the great divide between expert and layperson, and to bridge the gap between the two cultures.

Each of us is gathered here this afternoon as a consequence of a sequence of mundane events, both decisive and accidental, on a collision course with the final days of a waning semester that — if it was like mine — was both difficult and rewarding. From another perspective, however, we can understand ourselves as gathered here not accidentally nor mundanely, but rather as part of a grand sweep of history, a sweep that has brought our institution, the American University, to a particular historical moment, and landed us, as its stewards, on a precipice — leaning too far forward to go back, but still too far back to see what’s over the cliff.

This is a historical moment for us in the university, and you, as participants in a dialogue between two cultures, have a role to play. I want to thank Erik Fisher and Rolf Norgaard for inviting me to talk with you this afternoon about this historical moment, its consequences in everyday teaching and learning, and the ways that multidisciplinary can help us to renegotiate the moment and meet the challenges that face us as we work toward renewal.

The Historical Moment for University & Society

The key to understanding the American University lies in understanding the relationship it holds with society at large. The history of this relationship is a comparatively short one. Although a variety of liberal arts colleges in this country trace their roots back to the Revolution, most research universities, including this one founded in 1876, trace their origins to the expansion of the professions following the Civil War. This expansion was driven by industrial innovation, population explosion, and the resultant need to develop professionals equipped to deal with industrialization and its technological and social consequences. My home institution, Rensselaer Polytechnic Institute, was founded a half century before in 1824, but its mission was just an early manifestation of the mandate to “educate the sons and daughters of farmers and mechanics in the application of science to the common purposes of life.”

One of the best ways to understand our current moment is to see it in the context of this history and the work of one public figure, the psychologist-turned-philosopher William James, provides us with an unusually clear picture of what was involved in intellectual work of the period. James' career spanned almost exactly the period during which the university emerged: He began publishing in 1868 shortly after the end of the Civil War and his final work was published posthumously in 1911 when the shape of the modern research university, if not entirely complete, was at least clear in its major details.

As scholars have noted, rhetorical practice — the practice of speaking and writing, of making arguments, of moving women and men to belief and action — changed in fundamental ways during the nineteenth century. In work with Greg Clark, my colleague Michael Halloran has characterized this change as the transformation of an oratorical culture aimed at achieving public consensus to a professionalized culture aimed at supporting private or more specialized choices. In its development, James' rhetorical practice reflects the general changes Clark and Halloran noted.

In the early period of his writing, James looked like the traditional rhetorician of the older oratorical tradition. Born to money and educated for the profession of medicine which he never actually pursued, James wrote his earliest publications from the perspective of the gentleman of leisure publishing his thoughts to move discriminating readers to action. In these early arguments, James clearly assumed the existence of a public arena controlled through the development and display of good arguments. In a review of Herbert Spencer's work, for example, James portrayed a struggle between his own readers and the “hard-headed readers” of the popular press who supported Spencer's views:

a large proportion of those hard-headed readers who subscribe to the *Popular Science Monthly* and *Nature*, and whose sole philosopher Mr. Spencer is, are fascinated by it without being in the least aware

what its consequences are. ("Remarks" 893)

Unlike these readers, James attributed to his own readers an already knowledgeable awareness of Spencer's faults:

The defects of the formula are so glaring that I am surprised it should not long ago have been critically overhauled The reader will readily recollect what it is (893)

James then invited these knowledgeable readers to walk through the reasoning supporting the position they held in common:

Let us examine the reason that Mr. Spencer appears to consider coercive (893)

Finally James suggested to these readers that this reasoning become the basis of a public stand opposing Spencer's ideas:

But here it is decidedly time to take our stand and refuse our aid in propping up Mr. Spencer's definition by any further good-natured translations and supplementary contributions of our own. (900)

In this rhetoric, as in other pieces of early work, we see James operating upon a public stage. He addresses an educated public; he portrays a public struggle; he takes for granted its public consequences. At this stage in his career, the public was the natural home for the intellectual.

Though James never entirely ceased to write this kind of piece, his appointment to the faculty of Harvard University in 1873 initiated a period of professionalized publication. During this time, his texts, heavily laden with academic citations and published in speciality publications, aimed to establish correct knowledge among an academic elite — first of psychologists and later of philosophers. In a piece originally read to the "Scratch Eight" philosophy group in London and later published in *Mind*, for example, James skillfully used citation to establish both his own and his readers' acquaintance with the set of technical concepts he intended to address:

As is well known, contradictory opinions about the value of introspection prevail. Comte and Maudsley, for example, call it worthless; Ueberweg and Brentano come near to calling it infallible. Both opinions are extravagances Comte is quite right in laying stress on the fact that

This is the ground actually maintained by Herr Mohr in a recent little work. "The illusions of our senses," says this author. . . .

But, sound as the reasoning here is, I fear the premises are not correct; and I propose in this article to supplement Mr. Sully's chapter on the Illusion of Introspection, by showing ("On Some Omissions" 986-987)

Unlike the Spencer review, this scholarly piece made no mention of James' readers nor of their responsibility in the public arena. Instead, readers were assumed to inhabit the same intertextual world as James did and share with him the same set of technical concerns. Comte and Maudsley, Ueberweg and Brentano, Herr Mohr, and the intrepid Mr. Sully together form the society of professional philosophers from, for, and against whom James speaks. In the course of less than a decade, then, James had shifted from the oratorical to the professional culture.

Unlike many large-scale culture changes, this rhetorical transformation did not pass unnoticed in its time. In fact, many commentators during the late nineteenth century not only noted the loss of civic consensus going on under their noses, but also bemoaned the movement of authority away from the public arena and into specialized, professional communities. Toward the end of his life, for example, James himself complained about the way academic philosophers had ceased to care about the beliefs of the general public:

In philosophy it is really fatal to lose connection with the open air of human nature, and to think in

terms of shop-tradition only. In Germany the forms are so professionalized that anybody who has gained a teaching chair and written a book, however distorted and eccentric, has the legal right to figure forever in the history of the subject like a fly in amber. All late comers have the duty of quoting him and measuring their opinions with his opinion. Such are the rules of the professorial game — they think and write from each other and for each other and at each other exclusively. With this exclusion of the open air all true perspective gets lost, extremes and oddities count as much as sanities, and command the same attention (A Pluralistic Universe 637-638)

James believed instead that good philosophy had to be responsive to the public's concerns because philosophy was, by definition, a knowledge-making endeavor aimed at making sense of the issues of daily life:

I know that you, ladies and gentlemen, have a philosophy, each and all of you, and that the most interesting and important thing about you is the way in which it determines the perspective in your several worlds. You know the same of me. And yet I confess to a certain tremor at the audacity of the enterprise which I am about to begin. For the philosophy which is so important in each of us is not a technical matter; it is our more or less dumb sense of what life honestly and deeply means. It is only partly got from books; it is our individual way of just seeing and feeling the total push and pressure of the cosmos. (Pragmatism 487)

As James suspected then and we now know, his arguments for the inclusion of the public in the conversations of the academic professions did not carry the day. Within a few short decades, the iconoclasm we now take for granted in professional practice was established. After James at Harvard, for example, no philosopher attempted to combine academic interests with appeals to the general public as he had. In a history traced by Kuklick, metaphysics and ethics were abandoned for the more technical concerns of logic and epistemology. The oratorical tradition, as Clark and Halloran have labelled it, appeared to be dead.

This story of the decline of public discourse and its replacement with the individualized rhetorics of the professions is a familiar one to those working in the humanities (See Clark, Halloran, "Rhetoric," Miller, and Spellmeyer). For us, it is, in an odd way, a comforting story. Of course we, along with nineteenth-century commentators like James, bemoan the loss of a public arena and the consequent decline of the oratorical tradition. But, I would argue, we also take a kind of perverse comfort in the fact that this transformation was the work of large cultural forces over which we seem to have little control. By giving us a plot to explain the decline of the values we hold dear this story seems to explain our helplessness in the face of negative cultural attitudes towards humanistic learning that have dogged us ever since we began teaching in the modern university.

The basic problem with this story told by nineteenth-century commentators concerning the demise of oratorical culture lies in the identification of an appropriate villain. Nineteenth-century writers like James were almost universally agreed that the problem lay with the professions who, in their effort to rope off spheres of exclusive influence, gradually excluded all legitimate topics from the public agenda. Modern commentators have continued to make much the same claim (See Bender, Collins, Freidson, Haskell, Larson, Lieberman, and MacIntyre for examples). But if we look carefully at the facts, the argument doesn't stand up.

The development of the American Social Science Association, for example, shows quite clearly that early advocates of a professionalized social science had no intention of abandoning the public arena in favor of the disinterested pursuit of academic knowledge. These social scientists assumed, almost without question, that the development of a sound professional knowledge of social problems would be coupled with an appropriate agenda for civic action:

[I]t was a universe in which the professional social scientist had a vital role to play, for it was largely

through his explanatory prowess that men might learn to understand their complex situation, and largely through his predictive ability that men might cooperatively control society's future and thus get the cash value of their small measure of freedom. (Haskell, 14)

True, these early social scientists seemed to be swimming against the current by trying to forge a new public agenda, one broad enough to serve the interests of the women and immigrants who had previously been excluded in the older oratorical tradition. But social activists like Addams rightly perceived that the maintenance of a civic culture would actually work toward the benefit of the disenfranchised they championed (Peadar) and they had little to gain by going along with the privatization of moral choice described by Clark and Halloran.

If early members of the professions like Addams had no intention of removing their issues from the civic arena, who was it then that brought about its demise? The surprising answer to this question appears to be the privileged practitioners of the oratorical culture itself. In his essay on the conservative homiletic tradition in New England, for example, Hirst shows that the privileged ministers who condemned professionalization were at the same time advising their congregations to forsake general civic action and instead to attend to the private condition of their own souls.

And, according to Tonkovich, Sarah Josepha Hale, long time editor of the conservative *Godey's Lady's Book*, decried the loss of public consensus at the same time she counseled her readers to make their civic arguments through private letters to family and friends. Both of these characters, though bemoaning the destruction of the public sphere, were at the same time denying it legitimacy and seeking to construct alternative, more privatized places — the individual soul and private correspondence — for the preservation of traditional cultural values.

Thus, it was most often those whose social position would have guaranteed them a place in the older oratorical culture who were, perhaps unwittingly, making arguments for its decline. And the reasons supporting this behavior are not hard to find. By the close of the 19th century, the American public was not the same group it had been at the opening of the century: It was no longer exclusively white. It was no longer predominantly Protestant. And it was no longer restricted in membership. Women, immigrants, African Americans were all seeking to place their concerns on the national agenda. As a result, practitioners of the older oratorical tradition could no longer count on public consensus to support their views as James so clearly had assumed in his early work. They might bemoan this loss, but not so much that they were eager to have civic power fall into the hands of those who — like Jane Addams, the abolitionists, and social reformers — would use it to make new social arrangements.

The second half of the nineteenth century thus found the upper-class eastern elites rapidly losing ground in the debates over civic action and looking for a new instrument to maintain their influence. They found this instrument in the modern university. Largely financed by industrial tycoons with a new-found allegiance to high culture and a big stake in the status quo, universities like Harvard, Johns Hopkins, and Stanford early on renounced all claims to direct civic action and instead took refuge in the development of true knowledge (Bender, Haskell, Oleason and Voss)

While the presidents of these new universities were careful to claim social benefits for the new knowledge their institutions would create, these benefits were left to individual graduates to figure out. In fact, as sociologist Freidson has pointed out, it is only after students graduated and started their professional careers that they encounter a host of social concerns that defy the simple application of the knowledge they have learned in school. Civic power thus becomes the province of individual members of the profession, supposedly acting in ways consistent with their professional training, but only remotely guided by that training.

Meanwhile, concern with broader social issues was actually being taken up elsewhere in the university. In general education courses, students were taught the descendent of the liberal arts

curriculum of the older eastern colleges. As historian Veysey has pointed out, during the nineteenth century, advocates of this liberal arts training had been in a running battle with proponents of specialization. Eventually a political settlement between the two was reached. The liberal arts were given control of students' first two years of college and the professions were given all subsequent years of training.

The postwar general education movement solidified the distinction between values and common culture on the one hand and specialization and knowledge production on the other (McGrath, Bloomers, Gerber, Goetsch, Jacobs, Longman, Olson, Smith, Stroud, and Van Dyke). The influential "red book" from Harvard, for example, clearly identified the role of general education as the preservation of common cultural values:

It is impossible to escape the realization that our society, like any society, rests on common beliefs and that a major task of education is to perpetuate them. (Buck, Finley, Demos, Hoadley, Hollinshead, Jordan, Richards, Rulon, Schlesinger, Ulich, Wald, and Wright 46)

From the perspective of advocates of the oratorical culture, the political compromise between the liberal arts and the professions had the felicitous outcome of ensuring that all those who would eventually be credentialled for professional practice would have some passing acquaintance with the culture of the older oratorical tradition. Reifying the relationship between civic and professional culture as one of simple curricular succession, general education made access to the rewards of professionalization contingent upon a pledge of allegiance to the high cultural values enshrined in the liberal arts — or at least enough of a pledge to get a passing grade.

Consequent Problems in Teaching and Learning

This settlement actually had mixed results. Some students found that general education resonated with the values they brought from their home culture. It thus provided some them an articulated rationale for the largely conservative decisions they made as professionals (Collins). By contrast, other students found that the liberal arts were at odds with their home values, and they came to view general education as one more obstacle on their career path, irrelevant to their later professional decisions (Bledstein). Whether positive or negative in its impact, however, the general education movement made the application of civic values to professional decisions a private, individualized matter.

The consequences of this arrangement was brought home to me a few years ago when, as director of freshman comp, I spent the majority of my time with students who were trying to get out of taking the course. These students felt they were being stigmatized by being placed into our freshman course. They felt they had better things to do with their time. They felt they had already mastered whatever in the world it was that we thought we had to teach. They thus spent a lot of time and sometimes rhetorical effort trying to avoid this teaching.

At about the same time, I got a call from someone who wanted me to give an hour-long lunch time seminar on writing for staff at the university. I agreed, not expecting much. I prepared some notes on some of the more obvious things my profession has to say about drafting, revising, and invention. What I found was a room full of interested people, somewhat reticent to admit their writing "problems," but hungry for my platitudes, very grateful and appreciative. I came away wishing I had rooms full of students like that, but it wasn't until very recently that I seriously began to ask the question, "Why not?"

Why not? Because those were working, credentialled professionals. Presumably, they didn't need university credentials anymore, and my teaching, like it or not, was part of a credentialling system. I could have reached them perhaps as a consultant or popularizer (and make more money), but not

without sacrificing my right to call myself a scholar and a researcher, a maker of new professional knowledge. What is the connection, I wondered, between being a creator of new professional knowledge and teaching writing as part of a credentialing system?

As part of a credentialing system, I got a good guarantee of my livelihood regardless of the quality of my performance; as a consultant, people would be free to take or leave me depending on how well I meet their needs. As part of a credentialing system, in other words, I got afforded a market protection for my services (Larson) and that market protection came at a high enough cost to society that it gave me the leisure to do scholarship and research (Shils). And I got access to that market protection through my own acquisition of credentials, credentials that the attendees at the lunch-time seminar would probably not have demanded in the same sense that a hiring, promotion and tenure committee would. So my own desire for professional status was what kept me teaching freshman comp, teaching students who would rather not be there. And their desire for the credentials of specialized training is what kept those students there nevertheless. In exchange for my gatekeeping services, then, I got a nice market niche.

The tragedy of this system is not simply that we haven't done as well as we could if society had given us more resources. The tragedy is that we have misdirected our resources, squandered our talents, and risk missing out on the chance to construct a much needed agenda for the new university. To me it seems obvious that we in the humanities have been living out the consequences of what was patently a bad deal between the professions and the liberal arts. To me, it seems obvious that the entire university has been living out the consequences of this bad deal. The problem with the too-pat story of the decline of the oratorical culture that I outlined at the beginning of this talk is that it has encouraged us to blame this deal on each other and has prevented us from recognizing our own parts as the direct descendants of the bargaining team, the liberal arts and the professions.

It is time, I would suggest, to renegotiate the deal. And to renegotiate it along lines other than those dictated by political interests. Suppose we were simply to ask ourselves: What would be an appropriate relationship between the liberal arts and professional education, between general education and the majors our students eventually choose, between, in other words, the civic culture of the old oratorical tradition and the newer culture of professionalization?

Renegotiating through Multidisciplinarity

That we gather here today to argue and consider is a sign that we are no longer satisfied with the nineteenth-century bargain between the liberal arts and the professions. Yet, we should realize that the old ways die hard and the new ways are hard to see. A recent mission statement for the Rensselaer Core Curriculum showed me that the bargain still alive and well in many places at the opening of the 21st century:

The Mission of the Core Curriculum is to develop a student's critical thinking skills, develop sensitivity to culture's *[sic]* other than one's own, establish the foundation for continued intellectual growth, and create an appreciation for the broad range of human intellectual and artistic endeavors. (Gabriele)

On its face, such a statement seems to offer little by way of offense. Like Mom and apple pie, these virtues — critical thinking, critical sensitivity, intellectual growth, broad appreciation — are hard to take exception to. Such goals, however, suffer from several severe limitations.

To begin with, they are highly individualistic and privatized. Such goals call for the inward transformation of the individual soul, the cultivated sensibility that will, presumably, create the foundation for professional activity. Collective action, social accomplishment, and public good,

however, are unaddressed. For what purpose are critical thinking, critical sensitivity, intellectual growth, and broad appreciation cultivated? With what outcome and purpose? The statement remains silent on these issues because fundamentally, the core is seen as socially inactive, publicly irrelevant, entirely private.

Second, such goals are culturally sterile. The metaphors of foundation and appreciation both place the engine of culture-making elsewhere. A “foundation” is a foundation for something else, something to be added later, something insufficient in itself. An ‘appreciation’ is an appreciation of something else, something made elsewhere, something accomplished in ways and with techniques beyond those required for the appreciation. The knowledge left to the citizen, to her general education, is, then, a sterile knowledge, a knowledge for consumption, discernment, appreciation, but not creation, dialogue, investigation — for all of these productive virtues remain outside of the sphere of the general public and in the hands of the professions and disciplines.

Third, such goals are successive. General education, as foundational, is taken to be that which is built upon by the more serious work of specialization. Rather than active engagement between the claims of the specialist and the citizen, we get an ethic of replacement, of moving on. The domain of the specialist is seen to have no intrinsic relationship with that of the citizen. Like food and water, the basics of culture and public activity can be taken care of early, leaving time and resources for the important and creative stuff that comes later. And just as it is irrelevant to the professional’s performance whether or not she had broccoli or ice cream for last night’s dinner, so too is it irrelevant whether she had rhetoric or martial arts in the freshman year. Of course, we may all agree that as a person, she may be better off with the rhetoric and broccoli than with the ice cream and martial arts, but these are matters of the condition of body and soul that are not of intrinsic relevance to her professional performance.

The concept of a multidisciplinary education that I am here to recommend to you today, presents us with an alternative conception. Rather than concerning itself with the private condition of the individual, it engages itself with the public sphere. Rather than providing for the consumption of knowledge produced by other means, it is, in itself culturally productive. And rather than relating to professional education through curricular succession, it engages in concurrent and interactive exchanges.

Before I elaborate on how multidisciplinary works, let me be clear about what it is not. Multidisciplinary is not interdisciplinarity. In interdisciplinary research, researchers and scholars work at the periphery of their discipline, borrowing the techniques, values, or mandates of a nearby discipline in order to address pressing questions. If successful, such borrowing is gradually incorporated into the work of the discipline itself. Evolutionarily, then, interdisciplinary work is the work of disciplinary renewal, for through such borrowings, disciplines remake themselves, moving work that was once seen as peripheral and challenging to the center as normative. Interdisciplines are inherently unstable, for they form and dissolve just as the norms and challenges facing a discipline form and reform.

Multidisciplinary work, on the other hand, does not naturally evolve into disciplinary work. It is, by nature, a team effort, the repeated coordination of multiple disciplinary endeavors for the accomplishment of some larger purpose. To be successful, each of the disciplines involved in a multidiscipline must develop new patterns of cross-disciplinary interaction, but the nature of the disciplines remains distinct. This is not to say that multidisciplinary is not transformative. As I’ll make clear in a moment, I think it is inherently transformative. But the transformation does not, so to speak, result in the melting pot, but rather in the stew.

A few years ago, I had the opportunity to found and direct a grass-roots forum in multidisciplinary

design at Rensselaer and part of our effort was to create a multidisciplinary design minor. Part of the requirements for the minor called for students to take courses, both in theory and in design, in a second discipline outside of their own. An architect, for example, might specialize in document design. A document designer might take work in engineering design.

The response to this initiative by students was overwhelming. I remember, for example, one Friday 8 am breakfast when over 50 students turned out to hear about the new minor. The then President of the university, aware of this response, said that this was all well and good, but couldn't we make this into a new major? And I thought to myself, how does one major in a multidiscipline? It is in the nature of multidisciplinary to rely upon rather than replace disciplinary training. Majoring in multidisciplinary is an oxymoron. I'll return in a moment to talk about the challenges to renewal that this request for a major posed, but my point here is just to clarify that for multidisciplinary to exist, there must be multiple disciplines involved, and they don't go away as one does one's multidisciplinary work.

Multidisciplinary departs in some revolutionary ways from the concept of disciplinary work. Many definitions of discipline and profession exist: some are theoretical and focus on defining the ideal of a discipline in terms of autonomy, knowledge, and technique. Others are more sociological, and recognize that many professions don't live up to this ideal, but rather struggle toward it in an effort to garner market protection. But whether theoretical or sociological, all of these definitions acknowledge the desire of the discipline to carve out autonomous domains of action, domains in which they apply specialized techniques and contribute knowledge and understanding.

Interestingly, and not insignificantly, this model of disciplinary and professional action in many ways resembles the model of the modern industrial organization, a model that developed at the same time and in direct interaction with the modern research university. In the modern industrial organization, following the tenant of systematic management that are best known through the work of Frederic Winslow Taylor, work process are broken down and linearized into a sequence of steps, each step executed with in isolation from one another, with the output of one step "thrown over the wall" to the person responsible for the next step. Education, which was to prepare workers to participate in this kind of rationalized work process, focused on preparing specialists to fulfill their duties in relatively narrow domains in which their specialized knowledge could be brought to bear.

Multidisciplinary challenges this tenant of autonomous action by suggesting that real social, technical, and scientific challenges cannot be met through the sequential application of disciplinary techniques. Instead, disciplines must undertake projects collaboratively, a demand that fundamentally challenges claims to autonomy — to going it alone. Challenges to autonomy might not seem such a new concept. After all, even medicine, the most vocal advocate of professional autonomy, has not escaped accountability in a variety of forms, both financial and ethical. Most of us are not unused to some form of professional accountability and many of us even teach our students to expect it. This level of accountability does not, however, depart in significant ways from the "over the wall" model, because it focuses on making us accountable for our outcomes and leaves us more or less alone to do our work.

Multidisciplinary, by contrast, requires point-by-point interaction during the processes of knowledge construction, not just its results. One way to understand its requirements is to place it in the context of a model of deliberative action. As rhetoricians of science have pointed out, most disciplinary discussions can be understood as a kind of deliberation about where "we" should go, whether as a discipline as a whole or in this project in particular. Such deliberations involve making proposals and counterproposals — we should do this or we should do that — and engaging in argumentation in favor or in opposition to those proposals.

When the deliberation is disciplinary, participants use specialized techniques to generate proposals and

disciplinary values to evaluate them. In the example of William James' later work that I discussed earlier, James was engaging in just such disciplinary deliberation. Using the specialized techniques of philosophy, which concerns itself with premises and conclusions, and using disciplinary values like consistency and completeness, he argues against proposals made by Comte and Maudsley as well as Ueberweg and Brentano, and in favor of proposals made by Mr. Sully.

When the deliberation is multidisciplinary, the process is altered. Participants cannot expect mutual understanding of specialized techniques for, by definition, those outside of one's discipline, do not have access to nor understanding of your discipline's tools. What are the alternatives? Basically, there are three we should consider.

The first is the over-the-wall solution: In this scenario, the second discipline simply accepts the product of the first discipline as a given and works with it from there. This, as we have noted, is the solution of the modern organization. It leaves disciplinary autonomy intact, but, in practice, leaves much to be desired. As any one who has experienced inter-organization cat-fights knows, organizational sub-units are just as likely to reject, ignore, or otherwise subvert the "expert" conclusions produced by another sub-unit as they are to take them as a given for their own work.

The second alternative is the public solution: In this scenario, the discussion moves outside of disciplinary frameworks and, instead, adopts some common values and techniques. Such is the approach taken by James in his early work. It sets aside disciplinary knowledge to take up the issues in the public sphere. As suggested by many critiques of the public sphere, however, this approach assumes the existence of a common ground that is too often lacking in public debates. Furthermore, from my perspective, it assumes that public issues can be adjudicated without the benefit of disciplinary work.

The final alternative is the multidisciplinary solution; In this scenario, when the second discipline asks, "why?" of the first discipline, she must not let the first discipline retreat behind the walls of his disciplinary domain, but must instead be willing to chase that discipline into his own territory. She must dig into that disciplines' values and techniques well enough to be satisfied or to offer a counterproposal. And the first discipline must accept his burden to explain, to argue, to defend, and, perhaps, ultimately to yield to his colleague's reasoning.

The challenge that you here face today is really the challenge of making these interactions work; of always assuming a fundamental respect for each other and each other's disciplinary bases; of taking up the burden of making or explaining and persuading others of one's disciplinary conclusions; of forgoing the opportunity for disciplinary silence and retreat when asked to explain ourselves.

One of the greatest benefits of this approach lies in its potential to relink teaching and research, to serve as a common engine driving those two activities that are central to our mission and identity. Too often, educational reform that calls attention to the bankruptcy of general education lays the blame at the feet of a professoriate too much interested in research to care about our teaching. This critique is fundamentally unfair. It fails to acknowledge how the current system forces us to place the two in competition with one another. We are asked to see in research all that is intellectually stimulating, challenging and knowledge-making, while restricting our teaching to that which is common, already known, and boring.

Yet many of us already know something of the value of multidisciplinary work in our research. Research agendas in the early twenty-first century are hardly disciplinary any more; and few of us can work in isolation from one another. What we need to do now, however, is move that experience back into the curriculum, into teaching. How can we develop curricula and courses that will prepare students for endeavors that are multidisciplinary? Though it would be presumptuous for me to answer this question at this early stage in our deliberations, I think we can at least stipulate some of the criteria

that must be met in an adequate answer:

- A multidisciplinary curriculum must be a public curriculum; it must provide students with opportunities to cross disciplinary boundaries.
- A multidisciplinary curriculum must be productive; it must engage students in projects with recognized cultural value, to help them to do, not just to know, appreciate, understand.
- A multidisciplinary curriculum must be concurrent. It cannot sequence students' interactions with disciplines, placing their disciplinary learning as subsequent to and set apart from education in other disciplines.

Tomorrow morning I'll be talking about the opportunities that capstone design course may offer in pursuing this goal of the multidisciplinary curriculum, and I hope there that you will help me push this concept further. Before I close my talk today with an acknowledgement of some of the challenges that we face in pursuing this goal, let me share with you my vision of what it would be like to experience multidisciplinary in the classroom.

In my experience, the best teaching arises as an interaction between student and teacher; both benefit. Each needs the other. When we teach students in our own disciplines, we know this feeling. Our own students represent our disciplinary future and when they challenge us, run ahead of us, and question us, we listen to them carefully for they are often the best informants we have about where our own work needs to go.

When we move into teaching outside of our own discipline, this interaction often does not have the same sense of mutuality. But what if it did? What if we had as much to learn from those students in areas outside of our own as from those inside of it? What if we needed their insights and challenges to see where our own work should go, to see the unanswered questions, the methodological holes, the new opportunities? What if we needed to listen to them as much as they needed a grade from us? This is the vision of multidisciplinary.

The Challenge of Renewal

Building this kind of mutuality, in both our research and teaching, is the challenge we face in renewing the American University. This challenge is, as I have indicated, taken up in the minute-by-minute interactions we have with our colleagues and our students as we take on projects together. There are other constraints, however, that can place significant limitation on what we can accomplish one on one. I want to close this talk today by calling attention to those constraints — believing that forewarned is forearmed.

The first constraint is structural. The discipline is the organizational core of the American university. Course work is defined disciplinarily. We offer two kinds of courses — those for our majors and those for general education. Where would we put a course for students in other majors? When we constructed the minor in multidisciplinary design I mentioned early, one of the first things we realized is that most, if not all, departments fail to offer any serious opportunities to engage with significant disciplinary work to those outside the discipline. Curricularly, then, disciplines are often walled off from one another.

And suppose that one did find or create such opportunities for multidisciplinary courses. Who would teach them? In our institution, rewards for teaching are tied primarily to serving our own students. Serving general education is a secondary interest and certainly serving students in other majors is of

next to no interest. If, for example, I am highly successful in educating computer scientists, who will care? After all, wouldn't my time be better spent in educating our own students? In climates always constrained by limited resources, who will advocate for, reward, and perhaps even demand that I pay attention to the students who are not my own?

There are personal constraints as well. As intellectuals, our images of ourselves are strongly tied to our disciplinarity. Placing ourselves in multidisciplinary interactions can create strong misgivings if not downright fear. There are many times, as I am sure some of you know, when it would just feel easier, safer, to run and hide behind disciplinary walls. Particularly for junior faculty, such danger can be very real.

What this means, I think, is that efforts to create put multidisciplinary at the core of the new university must be made at two levels. On one level, we have to master those point-by-point interactions with our colleagues, master our fears, maintaining self-respect and achieving mutuality. At the same time, we must work to challenge the institutions that make such opportunities for multidisciplinary hard to come by, difficult to sustain, and seldom rewarded.

Another way to say this is that the struggle for multidisciplinary must itself be a public struggle, a productive struggle, and a collaborative struggle. Only in this way, we can repair the social contract between university and society, heal the great divide between professions and citizens, and bridge the gap between the two cultures.

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