

# Re-Thoughts on Interdisciplinarity

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The chancellor's essay (*Thoughts on Interdisciplinarity* January 12, 2015) offers a vision for the type of graduate that our university should be producing and the kind of university we should be in order to accomplish that. He also offers a critique of the way we currently are structured to achieve our mission. I appreciate both the vision and the critique and I am moved to offer a response.

It is hard to find anyone who does not see some value in both disciplinary and interdisciplinary approaches in the academy. In most universities the curriculum is structured around disciplinary departments and interdisciplinary endeavors, if they exist, are dependent upon them. Our structure reverses that. In most universities students face requirements of depth (a major) and breadth (general education, which can be either a sampling across the curriculum or a sampling of special topics) and some space for elective exploration. Our requirements mandate that either a major or minor must be in some way interdisciplinary, but otherwise contain the same components. Our hope is that our organizational structure and student requirements will allow us to accomplish our mission. The chancellor is challenging whether they are the best way of doing that. I have concerns as well that our structure and requirements may not be helping us meet our mission, but my concerns are somewhat different.

I interpret the chancellor as challenging the idea that interdisciplinarity can be efficiently anchored in a handful of problems as our budgetary units are supposed to be. He argues that selecting one set of problems and organizing the faculty around those problems creates a bias against other possible problems and organizations and that the combinatorics of the number of disciplines shows how large that bias is. The further argues that an organizational inertia, which tends to freeze it in time (the 60s), exacerbates the bias.

There is merit to this argument but I think it needs closer examination. The argument needs to face a distinction between problem solving and problem focus. Problem solving is a skill and a useful one. It rests on knowing how to collect relevant evidence, having methods to encourage idea generation, creating tools to evaluate possible solutions, and having the political and rhetoric acumen to implement a solution in a particular environment. The chancellor is quite right that one of the most crucial parts of good problem solving is getting the problem framed in the first place. Most problems come to us already framed by someone else (and that framing may or may not be helpful) or they come to us in a way that is more felt than carefully articulated. I believe our students get a rich exposure to problem solving. The component skills are scattered throughout the curriculum (the humanities are particularly good at raising issues and exploring the difficulties of framing problems; the sciences are particularly good at idea evaluation; the social sciences and professions are good at exploring implementation issues) and students have many opportunities to practice the whole process.

But helping students develop the skills of problem solving is not how we organize our faculty. We organize them by problem focus. To organize a faculty around ideas such as justice, information, or the environment does not necessarily mean programs that train students to end injustice in the world, solve all information problems, or reverse climate change (the chancellor is right to point out the hubris of that idea) but it does demonstrate that thinking about these problems requires the tools and perspectives of more than a single discipline. The founders of the university put together an array of problem foci that was broad and fairly inclusive in the sense that most disciplines could find a way to contribute to the broadly defined problem foci.

Did we have the best program array for 50 years ago and do we have the best program array for now? That's an important question and the chancellor is challenging us to figure out whether the structure of interdisciplinary units helps or hurts us in coming up with the best program array for our current time and place. I believe our history demonstrates some problems but not necessarily the ones the chancellor articulates. Our faculty members are almost entirely products of disciplinary training. That training creates a powerful force for us to belong to disciplinary groups. Even though our interdisciplinary mission is often an attractive recruiting tool and interdisciplinary opportunities are seen as valuable, we are still committed to our disciplines. Given that commitment, we rely on either individual commitment or institutional forces to make sure interdisciplinarity is not overwhelmed by disciplinary interests. We often claim that our structure into interdisciplinary units accomplishes that. I'm not sure that is true. Over the decades we have probably expended more energy on the question of what programs or courses count as interdisciplinary than on the question of how to deliver our mission. Most of us can find some way to support the claim that our disciplines are at least somewhat interdisciplinary and there are enough definitions of "interdisciplinarity" floating around so that there is at least some weak sense in which that is true. Because interdisciplinary programs have a privileged status here, it is easy to see why people would want to advance the argument that their disciplines are really interdisciplinary. (I am guilty of this myself. Last year I argued that ICS could achieve some resource efficiencies if computer science were judged an interdisciplinary program and I was somewhat shocked when the AAC and administrators actually approved the idea.) Interdisciplinarity doesn't come free. Is our structure inviting compromises in our mission?

In the past the idea that a problem focus spanned more than a single discipline was more obvious than it is today. Many of the interdisciplinary units in the social sciences had faculty from both psychology (to represent an individual perspective) and sociology/anthropology (to represent a group perspective). At times there were even faculty from the humanities who belonged to social science units. We have drifted away from that practice. The disciplinary pull is strong. This may be cynical but I think many of the changes in our structure over the last several decades (the creation of ICS, realignments in the social sciences, the division of the sciences between NAS and HUB, the separation of the arts) are more the results of individuals wanting to align themselves with like-minded colleagues than from lofty aims of finding better ways to achieve the aspirations of our mission. The chancellor makes the argument that interdisciplinarity can be a product of strong and rigorous training in a discipline and that it emerges on the edges of that training when people have an "uncommon awareness ... about the broader realm of human

concern and their ability to understand and articulate their own scholarly passion in ways that make that passion relevant in other spheres.” This suggests that strong support for the disciplines will (automatically but uncommonly?) produce interdisciplinarity, at least in the faculty.

Are there alternative designs that might achieve our mission on interdisciplinarity? The chancellor argues that investing in strong disciplines can produce faculty who can connect ideas from those disciplines to make them relevant to other disciplines and that creates interdisciplinarity in some form. As examples, he cites Brockman’s *This Will Make You Smarter* (you can buy the book but its contents are available on-line at <http://edge.org/responses/what-scientific-concept-would-improve-everybodys-cognitive-toolkit> ). These are fascinating short essays written by 164 academics from a wide range of fields in response to the question “What scientific concept would improve everyone’s cognitive toolkit?” The responses are ideas, concepts, claims, methods, and problems. How do these insights in faculty get to students? The chancellor seems to believe that curious students in a rich environment where faculty share their insights will learn without the costly organizational structure we have to ensure such learning.

Earlier in my career I was challenged by that structure to create a contribution to interdisciplinarity for the problem focus of my home unit at the time - Communication and the Arts. My approach was pretty much to respond to Brockman’s question “What idea from your discipline would improve everyone’s cognitive toolkit?” and my answer, which actually is one of the responses in his list, was to study the idea of metaphor. I created a course that examined metaphor as an aesthetic object, as a tool for persuasion, as a way to theorize, as a hidden constraint on thinking, and as a method to learn. I pumped the class full of examples from as many different fields as I could and quite frankly I have had a wonderful time teaching the course. Many students have told me of the transformative power of the course when something they had thought of as simply a literary device becomes central to thinking, knowing, and communicating. I think a similar course focusing on storytelling could play a similar role since the idea of story pops up in literature, journalism, data analysis, marketing, interpersonal relations (what’s your story), and in educational administration (as the chancellor tries to articulate our narrative).

Many of the responses in Brockman’s collection do not need a whole course. They are the kind of insights good teachers have always shared in enriching their teaching. Many have been encapsulated almost epigrammatically “absence of evidence is not evidence of absence” “personality traits are continuous with mental illnesses” “you can show something is definitely dangerous but not definitely safe” “Nothing in life is as important as you think it is while you are thinking about it” or given labels such as the nature of causality, recursion, double-blind experiments, cognitive illusions of all sorts. There can be a lot of excitement in finding and sharing such insights but it is a very different approach to interdisciplinarity than a problem focused one. Value questions are good examples of the need for a different kind of interdisciplinarity. If you ask someone to determine the value of the Packers to the Green Bay area, you’d get very different responses if you asked an economist, a sociologist, a historian, or someone in marketing or real estate. The interdisciplinary response here is a matter or

overcoming the limitations of the different disciplines. Disciplines what they are because they don't try to do everything. They are defined by their limits of what is an askable question for the field, what counts as evidence, and what methods can produce legitimate evidence.

Ultimately the question of interdisciplinarity is a matter of what we wish for our students. Do we want to enrich their cognitive toolkits with an understanding of ideas such as metaphor? Do we want them to integrate the disciplinary responses to determine the value of the Packers? Do we want them to understand from multiple perspectives the problems of global climate change and international justice? The chancellor has a vision of what we want for our students that looks a little different from any of those. He values students who know when learning, exploring, and adapting is more likely to be the winning strategy over problem solving; students who can approach complexity by spotting emergent properties more than using a reductive divide-and-conquer strategy; students who have a sense of entrepreneurship; students who are prepared for the world of work and can move innovation to application. The list of things we want for our students can be quite long and it is not always easy to set priorities or find ways to ensure faculty pay attention to those priorities. Currently accountability is in the hands of our colleagues in our interdisciplinary units, the idea being that interdisciplinarity is enforced by merit reviews done by people from different disciplines. In practice I've found that kind of accountability fairly weak. Would it be any stronger if we were asked what we contributed to the mission as much as what we did in teaching, scholarship, and service? And how acceptable would it be if the answer were "I taught Eagleman's limits of perception in three classes and Kleinberg's illusion of experience is two others" or "I taught a course on the use of metaphors in biology, psychology, political science, and computer science" or "I taught an art course that was required of computer science students" or "I arranged colleagues in history and psychology to teach a course on suicide" or "I taught my standard disciplinary course in a program that someone has blessed as interdisciplinary"?

I don't believe interdisciplinarity just happens. In the face of powerful forces for the disciplines a mission of interdisciplinarity needs support. It is a very real question whether we can afford the costs of supporting it. The chancellor's argument that preparing students for the world of work, innovation, and entrepreneurship should be a higher priority than interdisciplinarity has compelling support (although my reading of Moretti's *The New Geography of Jobs* is that developing the synergies and incubator spaces that can make universities job creators owes much more to chance individual initiatives than institutional strategies). My own suggestion that we have students graduate with a portfolio of skills that they can articulate and document rather than just giving them a transcript of courses with grades many employers have learned not to trust didn't seem to me too costly. Employers keep telling us that skills such as communication, critical thinking, problem solving, working in teams, and probably entrepreneurship and getting innovation to application are at least as important as finding the area under a curve, defining recursion, retelling the story of the causes of WW I, or providing an example of a neurotransmitter. Still, cost was probably a factor in why the idea lost out as a project to meet our accreditor's requirement for a university-wide experiment. At the chancellor's previous

institution a similar requirement was met with a project to give every student a significant career-focused experience.

I found the chancellor's review of his own education quite parallel to my own. I too am a product of a disciplinary education. As an undergraduate I went to Tufts which offered a rather limited set of majors and a generous opportunity to sample fields through general education. Tufts had a space for innovation, something it called the Experimental College, where there was some elective freedom to try new things. I tried out a course in computer science, which at the time was some readings on cybernetics and practice using FORTRAN. Like the chancellor I had an accidental but transformative experience. As I was trying to decide between majors in mathematics and classical languages, a faculty advisor from the speech department suggested I investigate the field of linguistics which he thought used some mathematical ideas in the study of language. Tufts did not have a program in linguistics but I was intrigued enough to apply to one at Yale for graduate study. Yale's program in linguistics is among the oldest in the country and they had no doubt about it as a distinct discipline, but there was an interest in interdisciplinarity there. It took the shape of an agreement among three departments (linguistics, philosophy, and electrical engineering) to study something they called information science. I ended up taking a few courses from those other departments but felt like a stranger in a strange land and I can't say the experience was a success. I guess the thinking was that the faculty present strong disciplines and the students will figure out the interdisciplinarity

If I can claim to be an embracer of interdisciplinarity, it is not because of my education. It is because of my experience as a faculty member at UW-Green Bay. I was hired primarily to work on a problem articulated by a community-university collaboration (an attempt to keep the Oneida language alive) but I was also faced with the problem of finding a place in a university that did not have a department or program in my disciplinary field. Although in the past the university hired faculty in disciplines it didn't have disciplinary programs in (linguistics, architecture, engineering), I have a hard time imagining how that would happen now. To contribute to the mission I tried peddling my expertise to other programs (philosophy of language to the philosophy program, language acquisition to the psychology program). This worked until those programs got their own specialists. I tried contributing to general education (freshman seminars and senior seminars). That worked until the general education moved away from special topic seminars toward more traditional sampling of disciplines. Twice I had the experience of team teaching with four or five colleagues in order to build introductory courses for interdisciplinary programs (people from photography, linguistics, speech, media studies, and journalism tried to build a broad communication program and people from computer science, media, organizational communication, design, and linguistics tried to build an information science program). These were initially exciting but expensive to maintain and eventually drifted back toward more tradition introductory classes. And I tried to help build a bridge between communication and the arts (the metaphor class). This had legs but it is unclear that it will continue beyond my retirement. I've certainly seen other attempts – an unsustainable attempt to find commonality in the arts with a program in aesthetic awareness; an attempt to build a native studies program out

of six separate disciplines that wasn't truly successful until the right hires allowed it to look more like a single discipline; the attempt to build an information science program by reconfiguring existing courses (the claim that we could do this with no additional cost got the program approved but doesn't really sustain it); and the collapse of distinctly interdisciplinary program in human adaptability and population dynamics (two problem foci) into a single human biology unit that in fact looks much more disciplinary. The lesson I take from all this is that however you think of interdisciplinarity, it is a fragile thing and in need of support.

I agree with the chancellor that our current efforts may be more aspirational than actual but I disagree that interdisciplinarity will just emerge out of investing in disciplines or will be sustained without support.