Introduction

The Ongoing Reconstruction of the University

In deep and resounding ways, the teaching and research emphases of universities shifted over the twentieth century, altering their academic core. During this period, for example, the relative prominence of university activities in such fields as philosophy, the classics, and botany all declined precipitously. The social sciences, meanwhile, came unbridled, and various types of engineering were born. In the distribution of its main academic endeavors, the university changed extensively.

The shifts occurred at all levels of the university organization: among the main branches of learning (the humanities, the natural sciences, and the social sciences – both basic and applied), among the various disciplinary fields (e.g., art, chemistry, psychology), and also within the subject matters of particular fields. The transformations – in the heart of what the university is and does – appeared in countries around the world.

Indeed from places near and far and from universities new and old, stories of reconstruction abound. For instance at 800-year-old Oxford, the

post-World War II period witnessed rapid expansion beyond the university's traditional strongholds in the humanities, with the founding of a business school (an endeavor once considered too philistine for a great university), the winning of six Nobel prizes in the natural sciences (endeavors once too technical and applied), and a sharp increase in the percentage of undergraduates reading the social sciences (endeavors once essentially unknown). In the composition of its basic activities, the new Oxford looked rather different from the old, ivied one.[1] During the same postwar period at the University of Chicago, an institution seven centuries younger than Oxford, the humanities themselves were transformed. According to the dean, the humanities moved away from (without abdicating) "the notion of transcendent geniuses" and "the concept of a canon" organized around "fixed, prescribed ideas of artistic worth." Accordingly the classics faculty, once devoted to the likes of Plato and Cicero, embarked on "studies of magic, religion, popular belief, and gender studies." English professors, previously faithful to Shakespeare and company, engaged "popular genres and mass culture." And the music department, a former bastion of European classical composers, embraced ethnomusicology, including "Middle Eastern popular romantic crooner songs."[2] At Chicago as at Oxford – and as at virtually all their peer institutions – teaching and research portfolios changed sharply over the twentieth century.

Similar reformations transpired far beyond the elite universities and core countries. Academic emphases at Nigeria's University of Ibadan, for instance, altered greatly even during the short span of 1963 to 1980. In 1963, Ibadan's humanities faculty was virtually the same size as its natural sciences faculty and 3.8 times larger than its social sciences faculty. By 1980, just seventeen years later, the humanities faculty had shrunk to 0.8 times the size of the natural sciences faculty and 1.8 times the size of the social sciences faculty. In relative terms, Ibadan's humanities lost substantial ground in a very short frame of time. It seems that outside the global elite, as well as within it, academic rosters underwent substantial revision.

Beyond particular universities and regions, there were twentieth-century expansions and contractions of entire knowledge domains, even on a global basis. For instance, of universities worldwide in 1959, fewer than half had economics faculties, whereas twelve years later, almost two-thirds did. The proliferation of economics programs happened broadly and swiftly. Likewise at a lower level of analysis, there were striking developments within the field

of history. In history departments worldwide, for example, the average share of courses on Greece and Rome fell by more than half between 1895 and 1995, even as the share devoted to world history quadrupled. What counted as meaningful "history" shifted acutely.[3]

In fact, over the twentieth century, one finds extensive alterations in the composition of the university's most essential activities throughout the world, at every level of the university organization, as well as across indicators of change – be they curriculum reforms, departmental closings, degrees granted, or whatever. The whole body of university knowledge seems to have morphed during this era, reconstituting the academic core. This is the starting point of our endeavor.

Change in the Academic Core

To some extent, of course, change is built into the modern university's foundations. The institution's animating quest for discovery requires the evolution of teaching and research priorities; its commitment to progress demands them. Thus in the year 1904 in a parting speech to the Board of Trustees, Jane Stanford extolled, "Let us not be afraid to outgrow old thoughts and ways, and dare to think on new lines as to the future of the work under our care." Let us embrace, in other words, constant renewal.[4] Similarly in the year 2000, the mission statement of the University of Botswana declared, "Naturally a modern university must recreate itself on a regular basis to ensure its purpose is always relevant."[5] By contemporary definition, universities are programmed for continual revision to remain abreast of the knowledge frontiers.[6] Change is in the nature of the beast.

Despite such reform-oriented foundations, however, the reshuffling of university priorities elicited repeated storms of protest during the twentieth century. In recent decades from within the academy, Bloom warned of a "closing of the American mind," as the university catered academic menus to the whims of ill-informed student bodies. Around the same time, Readings deplored "the university in ruins," as higher education lost its mission-guiding attachment to the nation-state. For Kirp, the critical problem was consumerism unbound, as the university reorganized around market models to produce a dissonant mix of "Shakespeare, Einstein, and the

bottom line." In Bryson's analysis, the result was nothing less than a culture "war" being fought over the university's composition.[7] The chorus of outcries from the professoriate – only briefly sampled here – conveyed an unequivocal sense of crisis.

At the same time in the popular press, imageries of basket-weaving students and comic-book-analyzing professors were conjured to illustrate the university's alleged ongoing degradation. Typical among dozens of screeds was a *Wall Street Journal* article decrying the loss of historical knowledge among U.S. students:

> No more than 22 percent [of surveyed students] had any idea that "government of the people, by the people, for the people" came from the Gettysburg Address. More than half could not identify the Constitution as the source of the separation of powers . . . .Only 34 percent knew George Washington was the general commanding the Americas at Yorktown, the ultimate battle of the Revolutionary War . . . .[U]niversity administrators, long cowed by the multiculturalists and pressure groups hostile to anything that might smack of Western culture, ought to consider getting up off their knees to provide young Americans with a serious education in their history and civilization.[8]

Declamations such as these leave little room for wonder: Not all academic innovations over the twentieth century were embraced across the board.

And yet for all such smoke, social scientists know surprisingly little of the fire. Many anecdotes and illustrations imply that the university's academic emphases shifted acutely and globally over the last century among the branches of learning, between the basic and applied divisions, among the disciplinary fields, and within the subject matters of particular fields. Still the contours of change remain almost totally undocumented in systematic empirical terms. Furthermore as illustrated above, many of the purported developments generated deep consternation. And yet sober analyses of the university's evolving priorities are few and far between.[9]

Thus we arrive at the inquiries that motivate our study. First empirically, exactly what changed in the university's academic core over the twentieth century? And then theoretically, what causal forces stood behind the observed changes? These fundamental descriptive and explanatory questions guide us through this book.

The Existing Literature

Large-scale studies of change in the university's teaching and research priorities are virtually nonexistent in the current literature. Given the intense scrutiny of so many other aspects of higher education, this omission is striking. At issue is the makeup of the university's most basic activities after all.

As suggested above, the literature's oversight may derive in part from the university's contemporary definition. Change in an institution built to change – "let knowledge grow from more to more," proclaims the University of Chicago's motto – can appear to be natural and therefore unproblematic, and thus researchers may disregard it. Complicating matters, summary indicators of academic priority changes are difficult to assemble in aggregate. The obvious candidates for measure – disciplinary enrollments, say, or funding allocations – are unavailable on both or either longitudinal and/or comparative bases.

What do exist in the literature are (often despairing) anecdotes of change, as digested above. Although these stories can provoke intrigue, they cannot stand in for systematic analyses of university reconstruction. What exist as well in the literature are many excellent and detailed case studies, charting developments in the teaching and research priorities of particular departments, fields, universities, and countries. These works are useful for the detail they offer and commendable for their fidelity to the gamut of available evidence. But essentially by definition, case studies present movements in academic emphases narrowly, often tracing just single threads of change through time.[10]

Altogether, the existing store of anecdotes and case studies provides a rich foundation for our investigations below. But we depart from them in three decisive ways.

First, the existing literature typically confines its gaze to single branches or fields of learning – the decline of the humanities, say, or the rise of biochemistry.[11] Characteristic pieces in this vein carefully consider the complex pressures promoting expansions and contractions in particular university domains. And yet in tightly delineating their objects of study, most such studies all but preclude the possibility of observing domain-straddling patterns of transformation.

In part, this is a problem because raising the standing of any one domain in the university necessarily lowers others: By definition, relative academic emphases are interdependent. More important, there seem to be forces of change that span across the knowledge domains, carrying implications throughout the academic core. To illustrate, we show in Table 1 the faculties and departments of the University of Tokyo in 1900 and in 2000. Considering the differences for a moment, one sector-spanning force of change seems likely to have been globalization, providing impetus not only to the new Department of Earth and Planetary Physics but also to the new out-reaching departments of Indian Philosophy & Buddhist Studies, Islamic Studies, Occidental History, and Slavic Languages & Literatures. Another broad force of change seems likely to have been the rationalization and scientization of society. The social sciences at the University of Tokyo exploded over the century – in new faculties of economics and education, for instance, and in new departments of psychology and sociology. Far from exhibiting the qualities of Kerr's "Tower of Babel" or "city of infinite variety," these data in Table 1 – although culled from one university only – show distinctly patterned rearrangements in academic emphases cutting across levels and sectors.[12] Studying knowledge domains in isolation necessarily underplays such features of university reconstruction.

In our first departure from the literature then, we regard the various knowledge domains as components of a dynamically integrated system – a unified "body of university knowledge" that metamorphoses together over time. In this, we do not mean to minimize the benefits of studying the particular stimuli of change vis-à-vis specific knowledge domains. We only mean to point out the additional benefits of studying the parts in terms of the whole. As some knowledge domains contract and others emerge and expand, they do so in interaction with one another and in the context of overarching environmental changes. The body of university knowledge transmogrifies in total. From this purview for example, the fates of physics and literature (not to mention physics and astronomy) cannot be disentangled.

As a second matter, the orthodox literature nearly always limits analytical attention to academic emphases within a single country or even university.[13] Such studies often provide full-bodied and detailed accounts of academic recomposition. Nevertheless, investigations thus confined are by design insensitive to transnational and global influences on the university's academic priorities.

Again, a quick perusal of empirical materials suggests the problems with such purview restrictions. The faculty and department listings for the University of Tokyo in 1900 (Table 1), for instance, look remarkably similar to those that would be found at a typical American land-grant university of the same era (e.g., the University of Minnesota). According to the U.S. Morrill Act of 1862, the land-grant universities were founded to teach classical studies, agriculture, and the mechanic arts, as well as military tactics – precisely what one finds at Tokyo in 1900. In particular, Tokyo's twin departments of Arms Technology and Explosives Technology suggest Morrill-Act parallels, especially given the fact that both they and their U.S. analogues were by 2000 long gone.

Even this bit of evidence suggests that analyses limited to particular country or university contexts are likely to miss encompassing forces behind university reconstruction. Accordingly in our second departure from the literature, we pursue the notion that at least some changes in the academic core have transnational and global wellsprings. We do not thus disregard university- and national-level factors; we only embed them in broader contexts. In academic-priority reforms, we argue, universities in Peru and Sweden may follow common models.

Taken together, these first two departures from the literature suggest the benefits of a research design centered on an empirical problem that at present is almost wholly absent from the social science agenda.[14] How did the body of university knowledge, as a whole and worldwide, change during the twentieth century? Where did the global academic frontiers retreat, and where did they advance? The literature's dominant case studies are ill equipped to recognize, much less address, such macro-comparative issues.

Third, beyond limitations in research design – and partly because of them – the bulk of the current literature is constrained theoretically. Most analysts adopt a loosely functionalist point of view, treating changes in the composition of teaching and research (more business, less botany, etc.) as adaptive responses to the shifting needs and interests of either society at large or of its dominant elites. In premise, one must note, such arguments are questionable. Most needs and interests could be satisfied more efficiently outside the university's encumbering walls in specialized laboratories of power and profit.[15] Nevertheless functionalist perspectives remain prevalent in the literature, taking organizational, economic, and political forms.

Table 1 Faculties & Departments at the University of Tokyo, 1900 & 2000[1]

Law	Politics	Political Science
	Law	Private Law
		Public Law
Medicine	Medicine	Medicine
	Pharmacy	Health Sciences & Nursing
Pharmaceutical Sciences		Molecular Pharmaceutics
		Functional Pharmaceutics
		Life Pharmaceutics
Engineering	Civil Engineering	Civil Engineering
	Mechanical Engineering	Mechanical Engineering
	Electrical Engineering	Electrical Engineering
	Architecture	Architecture
	Applied Chemistry	Applied Chemistry
	Naval Architecture	Naval Architecture & Ocean Engineering
	Metallurgy & Mining	Metallurgy
	Arms Technology	Urban Engineering
	Explosives Technology	Engineering Synthesis
		Mechano-Informatics
		Precision Machinery Engineering
		Aeronautics & Astronautics
		Information & Communication Engineering
		Electronic Engineering
		Applied Physics
		Mathematical Engineering & Information Physics
		Quantum Engineering & Systems Science
		Geosystem Engineering
		Materials Engineering
		Chemical System Engineering
		Chemistry & Biotechnology
Literature	Philosophy	Philosophy
	Japanese Literature	Japanese Literature
	Japanese History	Japanese History
	History	History
	Chinese Literature	Chinese Language & Literature
	English Literature	English Language & Literature
	German Literature	German Language & Literature
	French Literature	French Language & Literature
	Comparative Philology	Linguistics
		Chinese Philosophy
		Indian Philosophy & Buddhist Studies
		Ethics
		Religious Studies

Table 1 Continued

		Aesthetics
		Islamic Studies
		Oriental History
		Occidental History
		Archaeology
		Art History
		Japanese Language
		Indian Languages & Literature
		Slavic Languages & Literatures
		South European Languages & Literatures
		Modern European & American Languages & Literatures
		Greek and Latin Classics
		Psychology
		Social Psychology
		Sociology
Science	Mathematics	Mathematics
	Astronomy	Astronomy
	Physics	Physics
	Chemistry	Chemistry
	Geology	Geology
	Zoology	Zoological Sciences
	Botany	Plant Sciences
		Information Science
		Earth and Planetary Physics
		Biophysics and Biochemistry
		Anthropology
		Mineralogy
		Geography
Agriculture	Veterinary Medicine	Veterinary Medicine
	Agriculture	Applied Life Sciences
	Agricultural Chemistry	Bioenvironmental Sciences
	Forestry	Biological Production Studies
		Regional Economics and Resource Studies
Economics		Economics
		Business Administration
Education		History and Philosophy of Education
		Social Sciences in Education
		Educational Psychology
		Teaching, Curriculum, and Learning Environments
		Educational Administration
		Physical and Health Education

[1] *Sources:* 1899–1900 Tokyo Imperial University *Calendar* and 2000–01 University of Tokyo *Catalogue*.

In their organizational variant, functionalist explanations view altered teaching and research emphases as responses to the evolving needs and interests of university actors per se. Professors, for instance, who are protected by professional autonomy and motivated by career pressures (e.g., to publish or perish), may flock to some fields more than others – perhaps those perceived to be pioneering.[16] Similarly, an enlarging and increasingly diverse student population may demand new or different (for example, more "pertinent") courses of study.[17] Along the same lines, wealthy alumni and well-placed administrators may push study rosters in particular directions – for example, toward higher status or higher revenue-generating disciplines.[18] In perhaps the most common incarnation of the organizational argument, universities themselves are the salient actors, differentiating from one another in order to enhance their survival prospects in an increasingly competitive environment.[19] This process presumably precludes the appearance of population-level trends, as universities seek out unique organizational niches. Common to all these organizational arguments is the imagery that the university and its internal constituents are autonomous and effective actors, implementing academic-core changes over time to fulfill their needs and advance their interests.

In the economic version of the functionalist story, actors outside the university come into focus. Their financial needs and pecuniary interests are allotted the catalyzing roles in academic reconstruction. Corporations typically headline such analyses, encouraging the expansion of potentially profitable knowledge domains.[20] To illustrate, the Boeing professorships (e.g., of Aerospace Engineering at Penn State and of Global Learning at Wichita State) seem rather obviously oriented toward developing technical and marketing expertise favorable to Boeing's bottom line. Sometimes, economic functionalists also assign centrality to nation-states, which may selectively invest in particular "higher education units that aid in managing or enhancing economic innovation and thereby competitiveness."[21] The rise of the so-called knowledge economy, for instance, spurs many countries to fund university-based computer engineering programs. All arguments along these lines share the basic notion that actors external to the university – in pursuit of profits, economic development, or other monetary benefits – shape and reshape academic portfolios over time.