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The World-Wide Expansion of Higher Education

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About the Center on Democracy, Development and the Rule of Law (CDDRL)

CDDRL was founded by a generous grant from the Bill and Flora Hewlett Foundation in October in 2002 as part of the Stanford Institute for International Studies at Stanford University. The Center supports analytic studies, policy relevant research, training and outreach activities to assist developing countries in the design and implementation of policies to foster growth, democracy, and the rule of law.

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The World-Wide Expansion of Higher Education in the Twentieth Century

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The World-Wide Expansion of Higher Education in the Twentieth Century

Abstract

We examine the global expansion of higher educational enrollments over the 20th century. Rates of growth accelerated in virtually all countries after 1960. Drawing upon institutional arguments, we discuss the nature of this transformation and the historical trends that brought it about. A changed model of society came into place globally – one in which schooled knowledge and personnel came to be seen as appropriate for a wide variety of social positions, and where many more young people could be viewed as appropriate candidates for higher education. An older vision of education as contributing to a closed society and occupational system – with associated fears of “overeducation” – was replaced by an open-system picture of education as useful “human capital” for unlimited progress. This shift involves several global changes, including: (1) increasing global emphasis on democracy and human rights; (2) the advent of modern national development planning; and (3) the expansion of science as a broad authority in social life. We test these arguments and several others using pooled panel regression analyses over the period 1900-2000. We find support for our institutional argument, as well as for several more specific arguments regarding national variation: enrollments are higher in countries better organizationally linked-in to world society, where secondary enrollments are high, where economic development is higher, and where state control over education is low. But global trends dominate the analysis, such that many developing countries now have higher enrollment rates than European countries did only a few decades ago. We discuss implications of a world in which all countries have large elite sectors schooled in institutions that have a great deal of cultural commonality.

The World-Wide Expansion of Higher Education in the Twentieth Century

Participation in higher education has been growing at high rates in virtually every country in the world. In 1900, only about 500,000 students were enrolled in higher education institutions worldwide, representing a tiny fraction of one percent of college-age people (Banks 2001). By 2000, the number of tertiary students had grown to approximately one hundred million people, a number that represents about 20 percent of the relevant age cohort worldwide (UNESCO 2004). The bulk of the growth occurred after 1960, in just the last four decades. In industrialized societies, it is now common for more than half of all young people to receive some post-secondary schooling, with numbers surpassing *eighty percent* in a few countries (UNESCO 2004). But, the expansion is not limited to the wealthy, industrialized societies. Countries like Algeria, Kazakhstan, and Myanmar each now possess about as many tertiary students as could be found *in the entire world* at the start of the century (UNESCO 2004).

In addition to sheer size, higher education has expanded in scope and centrality, so that by the end of the century most of the world's elite positions were best accessed through tertiary institutions. While a few occupations had long historic links to the university (e.g., medicine and law), most did not. Business enterprise, for instance, has been reorganized, so that managerial positions are increasingly allocated based on higher educational credentials. The American diploma of the “MBA” has become global symbol, produced by a rapidly growing global system of business schools (Moon 2002, Mazza, Sahlin-Andersson, and Pederson 1998). In sector after sector, higher educational credentials have become principal criteria for elite selection.

As with the development of mass education systems over longer periods, the expansion of higher education represents a societal transformation with wide ranging implications. At the individual-level, the life course is reshaped. At the level of society, the structure of the labor market and processes of elite reproduction are altered. On a global scale, elites are increasingly trained in common frames of reference, and carry credentials that are recognized worldwide. Higher education thus provides an important infrastructure supporting many forms of globalization, ranging from the movement of professionals to the development of a common world culture.

One obstacle to understanding the rapid expansion of higher education is the fact that it has become taken-for-granted. The virtues of higher education seem obvious, and thus it is hard to conceive of alternative outcomes. It is more common to decry existing inequalities and to suggest the need for *faster* expansion among under-represented groups (women, minorities, citizens of developing countries) than to comment on the significance of the expansionary trend (see, e.g., World Bank 2000).

But the explosive expansion of higher education was quite unexpected. Until very recently, it was assumed that higher education served only specialized purposes, such as training clergy and doctors (Paulsen 1906[1893]). The celebrated ideal in nineteenth century America was not the university graduate, but rather the “self-made man” who succeeded in entrepreneurial activity. Indeed, ridicule of the “useless” academic was a common trope in the era. As enrollments began to grow, there was a real fear of “overeducation”. Not only was overeducation viewed as wasteful, it was also imagined that a surplus of graduates, unable to be absorbed in the labor market, would

experience anomie and might even generate social unrest. An account of from the 1930s captures the sentiment:

“The steadily rising tide of engineering students in German universities, with consequent overcrowding in the engineering profession, has moved [several trade associations] and other organizations *to issue a public warning that a sterile, educated proletariat is being produced* without a chance of gainful occupation while millions are wasted on its training.” (New York Times Nov. 1, 1931:56; our italics)

These German authorities go on to refer to the “exaggerated overvaluation of schooling,” which is the notion that higher education is needed to work in “all sorts of activities in industry, trade, and ... government” and later discuss the “evil... erroneous belief [among students] that their diploma will help them more readily develop an income.”¹ In short: a university degree was *not* seen as a generally useful degree. Neither the individual nor society would benefit from an excess of graduates. To be fair, progressives had already begun to speak out against these views, particularly in the United States. As early as 1899, for instance, the president of Stanford spoke against the conventional wisdom that “education is of no value to a business man” and criticized fears of overeducation (New York Times July 15, 1899: p. 5). But, it is clear from the debates of the time that his progressive views represented a new challenge, not the dominant discourse. Yet, in less than a century the progressive vision has become hegemonic. And, whereas 19th century views saw little practical or economic utility for education, the current discourse takes it as axiomatic.

¹ Still more surprising, in light of contemporary views, one group criticizes parents for perpetuating this “erroneous” and “evil” view by encouraging their children to attend higher education without considering the prospects for employment, suggesting that dutiful parents should moderate the educational goals of their children.

Analysts in the early twentieth century did not foresee a world in which policemen, secretaries, restaurant managers, or hairdressers would commonly sport a college education. As late as the 1960s, the notion that twenty percent of the world's children – and over 80% in some countries – might receive post-secondary schooling might have seemed both ridiculous and wasteful. Even today, there may be whispers about whether it is a wise social investment for governments of impoverished African nations to move toward double-digit tertiary enrollment ratios.

But, these older viewpoints are mainly reduced to whispers. They seem quaint and outdated in the face of the contemporary orthodoxy: that education creates generalized human capital that benefits both individuals and society. Yet, skepticism of the new model is not unwarranted. It has been surprisingly difficult to empirically document the “need” for college educational skills in many occupations that require such credentials (classically, Berg 1970). Moreover, the empirical link between university expansion and industrialization (or other labor market characteristics) is weak or nonexistent (Windolf 1997).²

In this paper we view the expansion and institutionalization of higher education as requiring real explanation, rather than starting with the assumption that the trend is an “obvious” consequence of industrialization or economic demands. We advance our thinking on the subject by showing empirically when and where it occurred. We try to infer from such data why originally specialized institutions producing training for limited sets of roles became the main regulator of elite selection, and thus social stratification, for

² Windolf does find a short term effect of unemployment, as people remain in college when job opportunities are scarce. But, the effect is not large and does not account for overall expansion.

the whole world. We discuss theoretical explanations for the overall global trend, and for cross-national variation in enrollments. Then we turn to quantitative analyses of higher education expansion. Finally, we consider implications of a world of “mass” higher education.

Global Trends and Explanations

Previous Research

Prior studies have noted growing tertiary enrollments in particular societies, and typically invoked explanatory frameworks that emphasized the local contexts of individual countries. The emphasis on local factors arises because most of the literature on higher education focuses on individual country cases, and case researchers are renowned for attending to special or unique features of their cases. Thus in the United States, it is conventional to call attention to the “GI Bill” as aiding the expansion of higher educational participation into new sectors of the population, and a “baby boom” as producing more candidates. In Third World countries, scholars commonly point to decolonization as generating expansion. In Europe, case researchers can refer to American influences, the weakening of standards associated with democratization (Wittrock 1993), or the policy initiatives of particular interest groups or political elites.

Comparative researchers have made a little more progress toward general explanations, and have identified one strong finding: The twentieth century expansion of higher education is a *worldwide* phenomenon, not one mainly linked to particular countries or types of countries. Riddle (1990, 1993) studied the rates at which universities were founded around the globe since the origin of the institution around the

year 1200. Riddle showed a very slow and consistent rate of new university foundings up until the French Revolution, followed by a modestly increased rate until World War II, and then a dramatically increased rate thereafter. She found that expansion is very general, and was unable to isolate national-level factors that strongly affected it. In the post-War period, countries without higher educational institutions create them at a very rapid rate. Meyer et al. (1977), in their cross-national study of tertiary enrollment ratios from 1950 to 1970, found very rapid increases in these ratios in all sorts of countries. Tertiary expansion, in fact, considerably outpaced the rapid expansion of mass (i.e., primary and secondary) schooling during the period (see also Rothblatt and Wittrock 1993). But these studies, too, were unable to find any country characteristics that strongly affect the rate of expansion.

Windolf (1997) took a different strategy, examining enrollments in a few countries (Germany, France, Italy, United States, and Japan) from around 1850 to 1990. Like the other researchers, he found a long-term expansion, especially after World War II. And like the other researchers, he was not able to find independent variables that strongly affected country-level variations. For instance, Windolf found no impact of industrial development on the growth of higher education, dispelling the most common explanation for the expansion. Instead, he tended to see expansion as feeding on itself, in what we discuss below as a process of competitive inflation (Collins 1979).

The Trend

Data on higher education enrollments come from two sources, both based on national reports. Since 1950 UNESCO gathers enrollment data from most countries, and

reports them in standard form (UNESCO 2000, 2004). The critical variable for our purposes is the number of tertiary students within a nation, which according to UNESCO approximates the students falling into ISCED categories of 5 & 6 (i.e., excluding post-secondary vocational or “junior college” programs). Banks (2001), working from the similar sorts of national data, collected enrollment data from the late 19th century to around 1980. For the post-war decades in which both data sets are available, they are extremely highly correlated (typically over .97). Given the similarity of the measures, we combine them to create a continuous data source covering the entire 20th century at 10-year intervals.³ To facilitate cross-national comparison, we standardize enrollments by national population.⁴

³ Fewer cases are involved in the early periods because many countries didn't have higher educational systems or were not independent. Combining the two data sources does not change our results. For instance, our conclusions are similar to those reported here when we look only at data from Banks over the period 1900-1980.

⁴ The other common standardization in the literature is to divide by the size of population in the 20-24 age group. Unfortunately, disaggregated population data of this sort are not available in the early 20th century for most developing nations (and even many industrialized ones), so we cannot use this denominator. However, the correlations between enrollments standardized to total population is similar to enrollments standardized to age 20-24. So, our findings are not substantially affected by our choice of measure. It is true that the two versions differ. For instance, European nations have fairly old populations, leading to a marginally larger denominator when measured per capita versus per age 20-24, compared to, say, African nations. However, we include lagged enrollments per capita in our analyses, which effectively controls for these sorts of systematic cross-national differences, and thus assessments about change over time yield very similar results regardless of which denominator we use.

Figure 1 shows total world enrollments in higher education in raw numbers through the twentieth century. Missing data – mainly in colonies and poor countries in the early period – are unlikely to be a problem in this case, since developed countries account for the vast proportion of enrollments. The Figure shows the dramatic character of the expansion in world higher education, which accelerates sharply around 1960.

[Figure 1 about here]

Figure 2 shows the historical trend more precisely, reporting mean national enrollment per capita for constant-case groups. The overall global trend could be influenced by the fact that more and more countries begin to report data in later years. To correct for the changing case-base, we report separate curves for each new “cohort” of countries that begins to report data.⁵ For example, the “1900 Constant Cases” curve tracks over time all countries that report data in 1900. The “1930 Constant Cases” curve reflects those that start reporting data by 1930, but does not include the cases represented in the 1900 curve. The interpretation of the curves is clear: The trend is not merely a byproduct of the changing case-base. Accelerating enrollments can be found among all groups of countries.

[Figure 2 about here]

⁵ These are not literally cohorts, but rather groupings by time when data is first available. However, since most countries begin reporting shortly after independence (especially after 1945), the table loosely approximates true cohorts.

[Figure 3 about here]

Figure 3, presents enrollments per capita broken out by world region. We distinguish the West, Eastern Europe, the Middle East and North Africa, Asia, Sub-Saharan Africa, and Latin America. We include only cases with data at most points throughout the period of reporting, so the curves start at different points in time. The striking feature of the results is how similar the growth curves involved are between these dramatically distinct sorts of countries. Sub-Saharan Africa lags substantially in enrollments throughout the period, but *growth rates* in the region are high in proportional terms. In every type of country, enrollment growth is rapid, especially after about 1960. As a result, typical Third World countries have enrollment rates in 2000 that approximate those obtaining in the West only a few decades earlier.

[Figure 4 about here]

We also observed striking similarity of enrollment trends at the individual country level. For purposes of illustration, Figure 4 presents the first case listed alphabetically in five major world regions: Afghanistan, Algeria, Argentina, Australia, and Austria. Since the absolute levels of enrollment differ significantly across these cases, we standardized by each country's value in 1990 to fit them on the same graph. Consequently, the graphs show the time trend – not absolute level. Given the huge political, social, and economic differences among these cases, the trends are unexpectedly similar. All cases experience acceleration of enrollments around or shortly after 1960. Without labels, it would be

difficult to identify one nation from another. Only Afghanistan proves to be distinctive, with a sharp falloff in enrollments between 1990 and 2000, coinciding with the rise of the reactionary Taliban regime. In a sense, Afghanistan may serve as “the exception that proves the rule”: only an extreme case of conservative governance (along with low-level civil war and economic marginality) halts the post-1960 acceleration of enrollments.

Finally, we report data from Banks (2001) for the United States over a much longer period, 1820-1980, to provide a broader historical context. Although the US had enrollment rates higher than other countries throughout the early period, the overall shape of the American curve parallels the other cases shown in Figure 4. The data in this panel also illustrate the tiny effect of the much-discussed GI Bill period in the overall historical trajectory. The GI bill did have a marked effect on enrollments that was significant in its historical period, but pales in comparison to the subsequent explosion of enrollments visible in the US data and elsewhere. Nor does this graph support commonly invoked demographic arguments. While the acceleration does crudely coincide with the “baby boom” in the US, the growth in enrollments is much larger in magnitude than changes in size of the school-age population.⁶

Explaining the Overall Trend

We begin with a discussion of the overall global trend, and later turn to explanations of cross-national variation. We observe three dominant features of higher educational expansion in the modern period, which any explanation must address. First,

⁶ Moreover, we see no fluctuation in enrollments in the 19th century corresponding to demographic changes of earlier eras. Demographics, alone, are insufficient to explain enrollment trends.

the expansion vastly outruns changes in any plausible national-level independent variable, such as population or economic development levels. Second, the expansion is surprisingly homogeneous across radically varying national societies. And third, the expansion is dramatically concentrated in a particular time period. In short, the expansion of higher education has the quality of a single global “event” or sea change occurring in the decades following World War II. It is difficult to adjudicate among possible explanations of such a shift, as there were many historical changes in that era. However, we can narrow the possibilities here.

First, and foremost, we can dismiss the notion that the observed global trend is principally the aggregate consequence of changing national characteristics. Arguments that hinge on dynamics within a single case, which are quite common in the literature, are obviously insufficient. But, even arguments about cross-national economic or political factors face a real challenge. For instance, economic development levels – often mentioned as a cause of educational expansion – were not very different in the periods before and after the explosion of higher education, nor were there obvious economic trends across many nations to account for the widespread nature of the expansion. Likewise, temporal and cross-national trends in trade, labor force demands, and other commonly-cited political and economic factors do not map onto the abrupt global shift in higher education. In addition, *ad hoc* theories developed to explain higher education in the industrialized West – such as allusions to a “knowledge society” or “new economy” – weaken when one sees that the trends also show up in countries like Afghanistan and Algeria.

To explain the growth of higher education, we need to shift our attention to a global perspective. Historical changes in world society between 1930 and 1960 ushered in a new model of society, in which old barriers to higher education expansion were demolished and new justifications for expansion and participation were created.

Changing Institutionalized Models of Society and the Rise of Higher Education: 1930-1960

Historical trends in higher education expansion are consistent with the neo-institutionalist notion that properties of national society, such as higher education, very much reflect prevailing world models rather than national characteristics (Meyer et al. 1992a, 1997). This idea is clearly important in explaining isomorphic change in a period-specific world-wide movement. We need to add to it an account of why the prevailing models, in substance, so dramatically emphasized higher educational *expansion*.

On examination, the *nature* of the change is quite clear. Before World War II, higher education, especially in Europe, was generally seen as properly creating a limited set of national elites required by closed national societies and occupational systems. Society needed some secondary school teachers, doctors, lawyers (especially civil servants), and priests. A few scientists were also necessary (though science was by no means seen as the engine of national development it has more recently become [Drori et al. 2003]). Thus, a poorly controlled expansion amounted to social inefficiency at best. At worst, it could create an explosive mixture of anomic and unemployed elites. Aspirations for expansion brought the threats of competition and social disorder, and should best be met by protective paternalism for the working classes, not the indefinite

expansion of the schooled service sector. Views of this sort were held not only by conservative elites, but also by socialist representatives of the working classes. As we note below, notions of this sort remained prominent in Communist societies, in which tertiary educational expansion was constrained (Lenhardt and Stock 2000; Konrád and Szelenyi 1979).

After about 1960, this whole theme weakened, aside from anachronistic outposts of concern about unemployed PhDs driving taxicabs (e.g., Freeman 1976). There was almost no more talk about “overeducation.” Fiala and Gordon Lanford (1987) show that precisely in this period, national doctrinal statements about the purposes of education shifted from a model of education as fitting people into a “static” society and labor market to a conception of education as producing human capital for national socioeconomic expansion. In the former model, too much expansion creates inefficiency and anomie. In the latter, it is a source of an endless progression of golden eggs.

The global cultural change involved has some obvious historical roots. Closed corporatist and statist models of society (Jepperson 2002) were deeply stigmatized as having created two disastrous world wars, a great depression, and the horrors of genocide. They were further decisively defeated in war, in good part by aggressively liberal, open, and individualist societies. An open international system was under construction, rife with Anglo-American influence, oriented precisely against a closed model of the nation-state and society (Boli and Thomas 1999; Djelic 1998). In this system, formerly suppressed colonies could make highly legitimate claims, not only for independence, but also for high levels of socio-economic progress – for which, in the

ideologies maintained since the period, human capital was a most obvious instrument (e.g., Harbison and Myers 1964).

The new model of society was linked to a whole series of global cultural and institutional changes, each of which helped legitimate the construction of a new societal model built on schooled elites. (1) *Democratization*, liberalization, and the expansion of human rights, reinforced a transformed picture of individuals as possessing both the rights and the capacities for unlimited amounts of schooling. During the whole period, an “education for all” movement has gone global (Chabbott 2002), and notions of “lifelong learning” have become routinely institutionalized in national policy. (2) *The global expansion of science* and increasing scientization of society turned scientific schooling from an exotic technical instrument into a mainstay of growth and of routine enhancement of human potentials (Drori et al. 2003; McEneaney 2003). (3) The rise of *national development* logics and state planning – later developing into generalized notions of individual and organizational planning for indefinite growth – made expansive change, rather than stability, the main focus of social policy (Hwang 2003). Finally, (4) the *structuration* of organizations and institutions in the world polity that serve to promulgate pro-educational cultural models and discourses. In the brave new world, all countries could progress, and progress toward equality. Education could be a means, and also a way to construct a virtuous world society (Meyer 2004).

These four dimensions of post-war post-modernist society provide indicators which we can employ in our subsequent empirical analyses. We turn to a brief discussion of each one below. Overall, they address our core world-level hypothesis:

Hypothesis 1: The post-war shift to a liberal, rationalist, and developmental model of society generated a worldwide pattern of increased higher educational expansion.

Democratization and Human Rights

A long secular trend toward political and social democratization and the incorporation of larger segments of society in the polity helped encourage increasing educational participation. Pre-democratic European societies were organized along relatively fixed class and/or status orders, and it was taken for granted that large segments of society could be excluded from much public participation. The post-War delegitimation of corporatist and statist social orders, famous for their sharp social distinctions, undercut tightly hierarchical systems. They were replaced by an era of liberal dominance in the international sphere that paved the way for increased democratization. The post-War era, and the 1960s in particular, saw successive attacks on a variety of forms of political and social exclusion, generating new social norms of equality that are formally espoused in the inter-state system and most of its states.

The expansion of democracy and human rights was very much a *world* process (Ramirez et al. 1998; Hironaka 2004). International organizations and institutions, ranging from the UN itself to countless INGOs, were key carriers of relevant discourses and policy models, and successfully influenced the citizenship policies of developing countries (Boli 1976). Discourses of formal equality – such as the UN’s Universal Declaration of Human Rights – became conventional in the international system and in the constitutions of most societies (Drori 1997; Boli 1976, 1980). From the civil rights

era purview, the absence of particular groups from higher education became a social problem requiring remediation.

In sum: the post-War shift to a liberal and democratic model weakened old forms of exclusion, while promoting new forms of expansive equality. Individuals (properly schooled) were to be empowered as creators of social progress and authoritative sources of social decisions. The dominant notions of democracy and human rights stressed not only the equality of individuals, but their positive and aggressive empowerment. From this vantage point, individuals could be seen as suited for very large amounts of schooling.

Scientization

Western-style science has expanded greatly in its scope and centrality over the last two centuries, with rapid globalization occurring in the post-World War II era (Drori et al. 2003; Schofer 2003; Toulmin 1989). One of the key features of this expansion has been the *scientization of society*, in which domains of the social world are increasingly brought under the authority and jurisdiction of scientists and experts (see Schofer 1999). For instance, individuals increasingly depend on psychologists and psychological knowledge to manage their relationships and medicalized understandings of diet and disease to manage their health (e.g., Meyer, Frank, and Miyahara 1995). Likewise, the activities of firms and states are increasingly informed by economic theories and scientific management principles (Gourinchas and Babb 2002; Moon 2002).⁷

⁷ Some caveats: We do not imply that all scientific knowledge is “right”, that the social application of scientific knowledge is done correctly, that improved outcomes necessarily result, or that scientists,

As society and the natural world are brought under ever more scientific analysis and scrutiny, it becomes increasingly “obvious” that scholarly knowledge will prove useful and beneficial in a wide range of circumstances. This represents a sharp departure from an earlier period where words such as “academic” and “scholastic” explicitly connoted a *lack* of relevance to practical matters.

The expansion of science created an important pre-condition for the explosion of higher education. Scientization directly increases the apparent utility of higher education, both for collective and individual social actors. It also, under modern conditions, implies that human persons and their organizations have the capacity to absorb and employ scientific knowledge (McEneaney 2003).

National Development and Planning for Progress

The period from the end of World War II to the early 1960s saw rapid and global institutionalization of modern ideas about national development (Chabbott 1999; Hwang 2003). In the post-War era, social and economic growth became strongly institutionalized and elevated as the central aims of the modern state. Former images of a static society with differentiated roles (e.g., requiring a fixed number of elites, intellectuals, manual laborers, etc, to function correctly) gave way to a more progressive view in which there were open-ended possibilities for growth (Chabbott 1999). Human

themselves, play an increased direct role in governance. Also, there are certainly exceptions and reactions: movements against the expanded authority of science, or denying its implications for particular issues (e.g., the greenhouse effect, or evolutionary doctrines, or research on stem cells).

capital and manpower planning theories which contained novel ideas: everyone (even manual laborers) might become more productive through increased education.

The rise of national development planning brought the nation and state front-and-center to the management of higher education. Governments began to track university enrollments more closely, and “forecast” future labor market requirements needed to generate rapid economic growth (Dent 1961). More graduates were almost always better than fewer, and such forecasting translated quickly into increased national efforts to build, expand, and fund universities and other forms of higher education (Dent 1961). Some bemoaned the erosion university standards – but in this new post-War worldview, such concerns were generally cast as undemocratic and unprogressive (Dent 1961).

Attention to national development arose in a global context. Cold War competition was one part of this, but so also was European post-War reconstruction effort, and the subsequent rise of the *international development regime* that institutionalized and routinized efforts to aid developing nations (Djelic 1998; Chabbott 1999).

By the end of the twentieth century, *centralized* national planning itself had receded in importance. It was replaced, not by a rejection of planning for progress, but by a decentralization of this planning to individual and organizational levels: everyone became, properly, a strategist for an expansive future. Instead of imagining that a central state would plan and build universities for all, there grew an increasing faith in the role of markets and decentralized actors to carry out such goals. It came to be seen as reasonable for individuals and families to plan for greatly expanded life chances through education, and for private organizations to strategically manage their expansion. Planning for

expansive change and “development”, thus, became institutionalized in society beyond the state (Hwang 2003).

Global Structuration

The three trends discussed above – democratization and human rights, scientization, and development planning – are all creatures of a world polity. And the organizations and discourses of this world polity have directly espoused the importance of educational expansion.

It has been shown repeatedly that nations are strongly influenced by world political structures, leading to global isomorphism in numerous aspects of government structures, policies, and behaviors (see Meyer et al. 1997 for a review). International organizations (IGOs and INGOs) are critical carriers of this discourse (Boli and Thomas 1999). The rapidity of isomorphic diffusion is dependent on both the degree of international structuration and the strength of national linkage to those structures (see Schofer and McEneaney 2003).

Clearly, a new scientized, democratized model of society is firmly in place on a global scale. Higher education can now be seen as necessary for the people who do child care, keep books, raise wine or cattle, manage businesses, or care for toenails, as well as for the limited set of traditional professions (medicine, law, civil service, and university preparatory teaching) that it focused on one or two centuries ago. It is also seen as a crucial benefit for individuals seeking personal fulfillment as well as opportunity and status-enhancement.

In this new model of society, the old objections to higher education disappeared almost entirely (outside the Communist world, as we note below), and the virtues of expansion are now taken for granted. A recent World Bank report on higher education for developing countries simply celebrates the need for expansive improvement (World Bank 2000). Little is left of the older fears that higher education might somehow be irrelevant to the needs of society (Berg 1970), or that its expansion would produce an over-educated and under-employed population (Freeman 1976), who might make a lot of political and social problems because of their unrealistically high expectations (Huntington 1968). Cost aside, there seem now to be few legitimate reasons to slow the expansion.

Models of society have changed so that many old roles are seen as requiring higher education, and many new roles requiring it are created. But models of the ordinary person have changed too, so that people in general are seen as capable of benefiting from higher education as general “human capital.” In the new vision, higher education is valuable human capital for everyone.

All these changes have the character of a world-wide cultural wave (or less kindly, cargo cult). There remains strikingly little empirical evidence that expanded higher education has positive effects on economic growth (Meyer et al. 1979; Benavot 1992; for a review, see Chhabott and Ramirez 2000). Evidence that it supports the performance of particular economic roles is also strikingly limited (Berg 1970). There is more evidentiary support for broader positive benefits like increased concern for the environment or democracy or human rights (Drori et al. 2003). The whole global growth

process since the 1950s seems to tell more about world culture than about any narrowly functional process.

Explanations of National Variation

Higher educational expansion is, in the main, a world process, as we have stressed. And this is strikingly at odds with a great deal of theorizing that emphasizes only national, or case-level, factors. But there is no real inconsistency in any logical sense, since both kinds of factors can be operating at the same time. Here, we discuss national variables as they affect expansion. The theories involved are familiar, because they tend to parallel ideas about the expansion of education at any level, and because they reflect general lines of reasoning in sociology.

First, there is *traditional socioeconomic functionalism*, often employed as a baseline or straw man in the field (Collins 1971). The idea is that national development, rationalization, and differentiation create needs for both specialized trained personnel and elites loyal to a common culture. The core proposition is that the expansion of higher education is strongly affected by industrialization and national development. This proposition survives in analyses of modern education, despite much solidly based criticism, because it is so much a part of modern culture and remains the standard modern ideological justification of educational expansion. In fact, however, empirical researchers do not find strong effects of national industrialization on the expansion of education at any level (Meyer et al. 1977, 1992b). And those concentrating on higher education tend to be very skeptical of any idea that the developed economy or labor force

requires or produces any specific level of higher education (Windolf 1997; Meyer et al 1979).

Traditional functionalism has critical variants, treating the modern system itself as functional principally for economic or political elites (e.g., Bowles and Gintis 1976). In these lines of thought, differentiation is seen as domination, and the integrative culture as hegemonic. The core prediction remains, however distinctly colored, the standard one: industrial/capitalist development predicts the expansion of higher education.

A version of functionalism which includes the availability of resources as a “supply-side” factor is often employed. The idea is that countries with more resources can expand higher education more. The point is especially plausible – particularly for developing countries – because higher education is quite expensive.

Traditional functionalism also has variants that shift the core argument from the national to the global level. Here the expansion of higher education in the core aids in coordinating relationships in the world, perhaps, in critical versions, to the advantage of economically and/or political dominant countries (see Clark 1992 for an illustrative argument; Dale and Robertson 2002; Weinberg 1967 on the expansion of education in Britain as part of the maintenance of empire). Again, the core predictions change very little, despite variations in political tone. Thus, the lines of thought reviewed above all suggest a core hypothesis:

Hypothesis 2: Socioeconomic development produces the expansion of higher education.

Complex World-Level Functionalism: Predictions become more problematic as functional arguments become more sophisticated. It is plausible that higher educational

expansion reflects the functional pressures of global development, but occurs everywhere rather than simply in core countries. Needs for world coordination and integration create a common worldwide elite culture, with training institutions found in every society (see Cohen 1970, for a most creative early variant of this general story). Again, one can see the coordinated system (and the forces that produce it) as generally advantageous, or as reflecting the needs of core political and economic elites for allies in more peripheral areas. The central prediction here would be that higher education spreads throughout the system in response to systemic expansion and globalization.

Most lines of theorizing that follow this general line suppose that global power structures would expand higher education everywhere, but especially in dominant core areas (Wallerstein 1974; Chase-Dunn 1989). They would thus make the same predictions as traditional functionalism – that educational expansion would especially characterize core countries. Their advantage over traditional functionalism is that they can offer an account for systemic expansion, too.

Institutional Theories: As functional thinking evolved in the sociology of education, it became more difficult to falsify. A crucial step was the shift from conceptions of education as a functional response to the needs created by socioeconomic development, to ideas about education as an efficient instrument of this development (Inkeles and Smith 1974). Thus, according to development and modernization theories, expanded education can be adopted by advanced elites as a planned device to increase development. Expanded education, thus, might be found wherever modernization is a goal, not only where it is a reality. This creative destruction of traditional functionalism

produces a version of institutional theory, according to which expanded education is a functional myth, not necessarily a functional reality (Meyer and Rowan 1977). The only difference is that the developmental or modernization perspectives suppose the myth is true and thus spreads rapidly due to its “obvious” functional utility. In contrast, we treat this myth as historically emergent in a world typified by scientization, democratization, and national development planning (which is, of course, historically linked to the rise of functionalist social theory), which spreads principally as a cultural ideology. In any case, this line of thought would predict the worldwide expansion of higher education in response to the post-World War II spread of the nation-state and diffusion of notions of nation-states as all having capacity for modernization and development.

With the installation of functionalist, modernization, and development theories as ideologies, sociological institutionalists argue that policies linked to these theories would spread independent of their actual efficacy. That is, higher education becomes a core component in the *model* of a properly developing national society – a proper source of elites, a proper opportunity for citizens, and a proper locus of training for differentiated roles. Institutional theories (see Meyer et al. 1977, 1992a, and 1992b) emphasize the diffusion of highly rationalized models of education and society in the contemporary world.

The lines of thought above all support two hypotheses about the expansion of higher education. The first, discussed above as Hypothesis 1, is that higher education will expand as development planning (and pro-educational ideology itself) becomes increasingly institutionalized in the world polity. However, nations are not all equally likely to conform to taken-for-granted world polity models. For instance, the world

polity more strongly influences European societies, which are enmeshed in the EU and countless international organizations, and less strongly influences autarkic and/or extremely peripheral societies such as North Korea or Bhutan. In short: degree of embeddedness matters. Nations more densely linked to the world polity should conform the most (Schofer and McEneaney 2003). Thus, we expect:

Hypothesis 3: Higher education expands most rapidly in countries linked in organization and identity to world models.

An implication of strong versions of institutional theories is that countries respond to the pressures of world models more than to their own histories. And indeed, if their own histories produce globally-unacceptable effects, they are likely to correct themselves. In other words, failure to expand higher education becomes an embarrassment, and states quickly strive to correct such “deficiencies”. This produces a prediction dramatically opposed to the ideas about inertia found in much organizational theory, and suggests a kind of negative inertia:

Hypothesis 4: Countries with low rates of higher educational expansion in given periods tend to have “corrective” higher rates in subsequent periods.

Theories of Conflict, Competition, and Organization: In response to the failures of functionalism, two broad lines of thought have evolved. Institutional theory, discussed above, treats functional ideas about socioeconomic development as cultural or ideological myths and models, rather than reflections of reality. Conflict and organizational theories

treat socioeconomic development as providing resources and grounds for competition, rather than social systems in some sort of equilibrium.

Some conflict theories overlap in their predictions with (typically left) critical functional theories, as discussed above, and require little attention here. It matters little, for our purposes, whether political and economic elites use higher education as an efficient method of organizing a whole social system that functions well for their benefit (the functional version) or whether higher education is simply an efficient method of control and extraction independent of systemic functioning. In fact, it is often difficult to understand which argument is being made (see, e.g., Bowles and Gintis 1976).

But one very distinctive idea arises from strong conflict and competition theories: the idea that as education becomes important (or seen as important) in the attainment of social status, groups and individuals compete more intensively for success in education, producing inflationary credential expansion far beyond any original functional requirements (Boudon 1973; Bourdieu 1977; Collins 1971, 1979, 2000; Meyer 1977).

A principal theme in conflict theories is that elite groups use the educational system to perpetuate the dominance of their arbitrary status-group culture, not simply their roles or their children (Bourdieu 1977; Collins 1971, 1979). This theme has implications for the content of higher education, but not directly for its overall expansion. However, it is common to argue that educational expansion is more rapid (and less functional) when status group competition is high (Rubinson and Fuller 1992; Rubinson and Browne 1994). As a concrete illustration, American higher educational expansion, with its attendant cultural embellishment, is thought to reflect reactions to immigration.

A common cross-national measure used to assess such forms of competition is the degree to which a country has competing ethnic and linguistic groups:⁸

Hypothesis 5: Higher education expands more rapidly under conditions of high ethno-linguistic fractionalization.

What *is* clear in the literature is that organizational conditions affect the operation of competitive pressures for the expansion of higher education. That is, organizational decentralization permits such pressures to operate in very inflationary ways (Ben-David and Zloczower 1962; Ben-David and Collins 1966). This is a conventional explanation of early rapid higher educational system in America. The attempt of the eastern coastal universities to block western expansion failed early on (Hofstadter 1963). Public universities, too, were unable to block the rise of accredited private colleges reflecting all sorts of (mostly religious) groups. On the other hand, strong states in Britain and France, allied with elite educational programs, were able to greatly delay higher educational expansion in those countries.

A most striking case, in the twentieth century, occurred in the Soviet societies. After a post-War period of educational expansion, Communist confronted a crisis between continued Party (i.e., “class”) control over society and the rise of a new class of highly schooled people. In essentially every case, after about 1970, the Communist countries chose Party control, and sharply restricted further higher educational expansion.

⁸ Of course, there are many other dimensions of status group competition that we would ideally like to measure. However, relevant cross-national measures are not available.

The story is told by Lenhardt and Stock (2000: see also Stock 2003, Baker et al. 2004, Reisz and Stock 2004).

Despite the convincing character of some of the concrete cases, the overall core idea about the constraining effects of centralization is rather fragile. Looking at the set of countries and time periods where higher education is a core institution, it can unambiguously predict rapid educational expansion in decentralized cases. But it can less clearly predict slow educational expansion in centralized ones, since the central authorities might have reasons to wish to more penetratively control local or international society (by the propositions above). The Communist case provides a good illustration. In the early parts of the post-War period, these countries in fact expanded higher education quite rapidly. They could, presumably, have continued this expansion, maintaining tight Party control. The real issue arose over which *model* of society the Party would employ – and constrained by much pressure from workers and worker-centered Party ideology, the choice was for the older protective paternalist system rather than the expansive new human-capital one (Konrád and Szelenyi 1979, Lenhardt and Stock 2000).

As a result, we put the case that centralized systems control expansion quite cautiously. Centralized countries have the capacity to control expansion, and *may* be more likely to choose to do so:

Hypothesis 6: Under global conditions of high institutionalization of higher education, expansion will be rapid in decentralized systems, but may be controlled in centralized ones.

The Expansion of Secondary Education. Several arguments – including institutional and conflict theories – link expansion of secondary education to growth of tertiary enrollments. Most common is an obvious demographic argument: secondary graduates are a requisite of tertiary expansion. But secondary enrollments are so high in most societies relative to tertiary enrollments that it is hard to see how they are a limiting factor that constrains the expansion of tertiary education.

From an institutional point of view, the expansion of secondary education is deeply enmeshed with tertiary expansion, though more as a spurious correlate than a direct causal effect. The same global models and discourses that support tertiary expansion *also* affect secondary education. Indeed, the role of global models and discourses in encouraging the expansion of secondary education is well established (Chabbott 2002; Meyer et al. 1977, 1992b). Secondary expansion can be seen as a measure of conformity to world cultural models stressing education. From this institutional point of view, it is obvious that secondary expansion would be associated with tertiary expansion and would predict it in a statistical model.

Finally, competition and conflict theorists point to the growth of secondary education reflects increased status competition and leads to credential inflation. Once secondary education is greatly expanded, it becomes necessary to obtain a tertiary degree to maintain social distinctions and/or obtain advantages in the social stratification system.

Thus, a variety of arguments lead to the following hypothesis:

Hypothesis 7: Higher education expands more rapidly when secondary educational enrollments are high.

Quantitative Analysis: Data and Methods

We turn now to quantitative analyses of growth in higher educational enrollments from 1900-2000, using pooled panel analyses. Throughout, we take as our dependent variable national enrollment in higher education, per capita. Our principal source is Banks (2001), but since coverage was spotty after 1980, we supplemented the measure with enrollment data from UNESCO (2001). We use *per capita* enrollments rather than *gross* enrollment ratios (standardized by the population age group) because the former is available for a much larger period of time, effectively allowing us to double the length of our longitudinal analysis. Moreover, the two measures are very similar for the time period in which both are available (with annual correlations often as high as .97). We consider all cases for which we have data at two adjacent time points.

The dataset is comprised of ten decadal cross-national panels running from 1900 to 2000 that are pooled together. Panels include the lagged dependent variable and other covariates measured 10 years prior to the dependent variable. This reduces concerns regarding the direction of causality compared to a cross-sectional design. We employ a random effects GLS regression model with robust standard errors because pooling violates the independence assumption of OLS regression. In short, we include an additional error term (U_i) to model the correlated error resulting from the same country appearing multiple times in our dataset:⁹

$$Y_{i(t2)} = a + bX_{i(t1)} + cY_{i(t1)} + U_i + e_i \quad (1)$$

⁹ This and other similar correctives make little difference, for reasons that will become clear below. There is little correlated error within country cases.

Dependent Variable:

Higher Education Enrollments Per 10,000 Capita. Our main dependent variable is available from Banks (2001). Missing data in later decades are supplemented with data from UNESCO (2000, 2004).¹⁰ This variable, lagged by ten years, is also included as an independent variable in the analyses.

World-Level Longitudinal Independent Variables:

Global Democratization. The global proliferation of democracy is measured by the proportion of independent nations that are democratic in any given year, based on data from the Polity IV Dataset (Marshall and Jaggers 2000).¹¹

Global Scientization. The global expansion of scientific authority is measured by the cumulative number of international scientific associations in the world at any given point in time, logged (Schofer 1999). These associations serve as a concrete indicator of the historical proliferation of the scientific profession, and its increasing institutionalization world-wide. Drori, et al. (2003) point out that the growth of international science associations provides a good reflection of the expanding scope and authority of science on a global scale.

Rise of National Development Planning. The advent of national development planning, a global shift that occurred principally in the 1960s, is measured by the cumulative number of nations that had initiated a national development plan (Hwang 2003).

¹⁰ The addition of UNESCO data does not affect the findings discussed below.

¹¹ Countries are defined as “democratic” if they had a “polity” democracy score of 5 or more, according to the Polity IV dataset (Marshall and Jaggers 2000).

Structuration of the World Polity. The increasing organizational structure of the world polity is measured by the cumulative number of international non-governmental associations in the world, logged. Whereas INGO *memberships* are commonly used to measure national embeddedness in the world polity, the *overall numbers* of such organizations in the world can be used to indicate the structural expansion of activity in the international sphere (see Schofer and McEneaney 2003).

Index: Scientization, Democratization, Development Planning, and Structuration. The prior four time-varying historical measures are combined into a single index by summing the z-score of each variable. This index captures the four inter-related global trends that, we argue, encouraged the global expansion of higher education participation.

National-Level Independent Variables:

World Polity Linkage: INGO Membership. Scholars have identified INGOs as key carriers of world culture and discourse, and a primary conduit through which the world polity affects nations (Boli and Thomas 1999; Frank et al. 2000; See Schofer and McEneaney 2003). Nations deeply embedded in networks of international organizations tend to conform to global norms most rapidly (Frank et al. 2000; Schofer 2003). These linkages are measured by the number of membership ties to INGOs held by citizens of a given nation, logged (Institut International de la Paix 1910; League of Nations 1929; Union of International Associations 1986, 1988, 1995, 2000).¹²

¹² Data on INGO memberships are not available yearly. Gaps in data were estimated by interpolation and, for the period prior to 1908, by extrapolation. Fortunately, INGO data are quite stable across nations and numbers grow smoothly over time. These estimates should not introduce substantial error to the analyses.

Secondary School Enrollment, Per 10,000 Capita. The expansion of secondary schooling is measured by students per 10,000 capita (Banks 2001). Missing data in recent years are supplemented with data from UNESCO (UNESCO 2000, 2004). Again, we rely on per capita data rather than enrollment ratios standardized by age group because the necessary population age data is unavailable at the start of the century. The high correlation between our measure and age-group standardized enrollment ratios, however, suggests that this is not likely to be a major source of bias in our analyses.

Economic Development. Development is measured by national iron and steel production, logged (Singer and Small 1990). The most familiar development measure, GDP per capita, is not available for a large sample of nations prior to 1950. A close correlate of national GDP, iron and steel production is the most commonly used measure of development in studies that cover a lengthy span of time (see Oneal and Russett 1999; Schofer 2003; Wayman et al. 1983).¹³

Ethno-Linguistic Fractionalization. We measure ethnic diversity (and thus the capacity for ethnic competition over access to education) using Taylor and Hudson's (1973) classic measure, which remains the best available. The index, ranging from one to one hundred, reflects the extent of ethnic and linguistic group diversity within a society.

No University System (Floor Dummy). We expect that societies with zero (or very near-zero) enrollments – most likely due to the absence of a domestic university – would be less likely to experience enrollment expansion in the subsequent period. Thus, we include a dummy variable to control for this “floor” effect (IAU 1998).

¹³ Analyses using GDP data (which are necessarily limited to the post-war era) generate results similar to those produced using the iron and steel measure.

Enrollment Growth in Prior Period. Each panel includes a dependent variable measured at time t , and the lagged dependent variable measured ten years prior ($t-10$). We also wish to examine whether growth is correlated *between* panels. Thus, we control for enrollment expansion in the *prior* period, from time $t-20$ to $t-10$. Growth in that earlier period is computed as a change score: $(enrol_{t-10} - enrol_{t-20})/enrol_{t-20}$

National Democracy. In addition to examining the impact of *global* trends toward democratization, we also examine the possibility that *national* democratic institutions encourage increased participation in higher education. We measure national democracy using the polity democracy index from the Polity IV dataset (Marshall and Jaggers 2000).

State Control of Higher Education. The measure assesses the extent to which the government maintains control over the higher education system within a society, possibly leading to lower rates of expansion (Ramirez and Rubinson 1979).¹⁴

*Communist Society * 1970-1990 Dummy.* Based on the argument by Lenhardt and Stock (2000) and others (e.g. Stock 2003), we expect that communist societies actively constrained higher education participation in the period 1970 to 1990. Thus, we created a dummy variable coded 1 for eastern-bloc socialist societies during that period.

*Former Communist * Post 1990 Dummy.* With the demise of the Soviet Union, we expect former constraints on higher education to disappear, perhaps yielding rapid growth in post-Soviet societies. This is measured by a dummy variable coded 1 for former socialist societies in the 1990-2000 period.

¹⁴ This variable is only available around 1970. We used the 1970 value to characterize societies over the entire century, making the assumption that the variable does not change substantially over time. This is obviously not satisfactory, and results should be interpreted with caution. However, the results were sufficiently interesting so that we opted to present them.

Descriptive statistics for variables used in the analyses can be found in Appendix A.

Results

Tables 1 and 2 contain results of random effects GLS regression models with robust standard errors predicting national higher education enrollments. The dependent variable all models is national tertiary enrollments per 10,000 capita.

Table 1 examines variables associated with our main global-level argument, along with important national-level arguments and control variables. Models 1 to 4 examine our four “indicators” of the changed model of society in which higher education could be viewed as universally valuable for individuals and societies (Hypothesis 1). In Model 1, we see that global democratization has a strong positive and significant effect on higher education enrollment. Education expands more rapidly in time-periods when democracy is more prevalent in the world. Model 2 shows a positive and significant effect of national development planning. As nations mobilize around “modern” conceptions of national development, enrollments grow. In Model 3, we see a positive, significant effect of the global expansion of science: scientization encourages the expansion of higher education participation. Finally, the intensified structure of the world polity itself, measured by the proliferation of INGOs, also has a positive and significant effect on tertiary enrollments, as shown in Model 4.

Model 5 includes an index combining the historical variables from the prior four models: democratization, scientization, and the rise of development planning, as well as the increased structuration of the world polity itself. Like each component, the overall index has a strong positive and significant effect on higher education enrollments,

consistent with our central argument (Hypothesis 1). As these global trends emerge and a new worldview becomes taken-for-granted – principally in the 1950s, 1960s, and 1970s – nations and individuals initiate a massive shift toward greater enrollments in tertiary education.

Table 1 also includes a variable for INGO membership (logged), the standard measure of national linkage to global organizations and discourses. INGO membership has a positive and significant effect on tertiary enrollments. Consistent with the prior literature, we see that global models and discourses do not affect all nations equally. Rather, societies most deeply embedded in the organizational structures of world society are influenced the most. Hypothesis 3 is supported. Interestingly, the effect of INGOs – while non-trivial – is not as large as in many studies (for the case of the environment, see Frank et al. 2000; for the case of science, see Schofer 2003).¹⁵ We suspect that the utter hegemony of pro-educational cultural models in the recent era attenuates (and may eventually eliminate) the impact of national linkage. Pro-educational discourses are so routinely taken-for-granted that even the most peripheral societies are strongly affected.

Models in Table 1 also include a measure of secondary education expansion, which has a positive and highly significant effect on tertiary enrollments. As discussed above, several arguments predict this effect. It is hard to distinguish between a

¹⁵ In fact, the INGO measure occasionally falls just shy of statistical significance in later models. However, this only happens when the related (and somewhat collinear) variable – the structuration of the world polity – is included in the model either alone or as a component of the “world index”. The latter is measured by total world INGOs, and thus necessarily correlates highly with association membership. The fluctuation in the nation-level INGO variable may imply that global structuration is more critical than national linkage – or it may simply be a byproduct of multicollinearity.

competition/credential inflation argument and the neo-institutional prediction that secondary education will expand along with tertiary due to global cultural models that stress education. However, in exploratory analyses (not presented here; available upon request) we noted that the effect of our “world index” is substantially larger when secondary education is *not* included in the model. Secondary education accounts for overlapping variance with our index of world-level trends that ushered in new global pro-educational models. This may suggest that secondary education mediates (or is spuriously correlated with) the effect of our global index variable – and thus reflects national subscription to world pro-educational models.¹⁶ In sum: secondary education has a substantial effect on tertiary enrollments, consistent with Hypothesis 7. The finding most plausibly fits the neo-institutional view, but might indicate support for demographic or competition arguments.

We also see positive and significant effects of economic development running across the models in Table 1. This is consistent with a variety of arguments (discussed above), ranging from classical modernization theory to narrow economic arguments about costs. We do not have leverage to adjudicate among them. However, evidence from longitudinal studies of core countries finds little effect of societal industrialization or other structural economic changes associated with development, casting doubt on classic functionalisms (Windolf 1997). It is clear, however, that higher education is quite expensive. So, our guess is that the poorest nations are constrained in their ability to

¹⁶ It is harder to imagine why domestic competition processes, which are highly idiosyncratic to the particular racial, ethnic, and class composition of various societies, would overlap heavily with our index of global historical trends.

expand universities due to the sheer costs. This results in decoupling, as the poorest nations cannot effectively implement global models (Weick 1976; Schofer and Hironaka, forthcoming). In any case, Hypothesis 2 is supported.

The ethno-linguistic fractionalization variable offers another surprise. We expected to observe a positive effect, based on the argument that competing status groups results in expansion/inflation. Instead, we observe a negative and significant effect of ethno-linguistic diversity: tertiary enrollments grow more slowly in diverse societies and faster in homogenous ones. Hypothesis 5 is not supported. It is possible that the negative effect is spurious, as the most heterogeneous societies are those in sub-Saharan Africa. Another possibility is that ethnic heterogeneity results in attempts by particular ethnic groups to control the educational system and exclude others. For instance, in the 1970s the Sinhalese used their political dominance in Sri Lanka to enact policies that systematically limited enrollment among a competing ethnic group, the Tamils (Rotberg 1999). Similar racial dynamics occurred in the US, South Africa, and Rwanda. In short, group competition may not always hasten expansion. However, we are cautious about drawing conclusions in light of Horowitz's (2000) assertion that this sort of horizontal ethnic stratification dynamic is relatively uncommon. In any event, our findings call into question classic ideas about the impact of competition on enrollments.

Finally, the "floor" dummy, indicating nations without a university system, has a positive effect that is occasionally significant across Table 1. This is directly contrary to expectations. We presumed that the absence of a university system would sharply limit enrollments. In fact, we see the opposite: nations lacking a university system, mainly former colonies that gain independence in the 1960s and 1970s, *rapidly* create

universities and rush to expand enrollments. Often this occurred with direct assistance from the international community and/or the former colonial power (UNESCO 1963). For instance, UNESCO organized conferences in the early 1960s, in which many newly independent sub-Saharan nations made a uniform set of pledges to increase tertiary enrollments, while Britain and France promised to provide resources to support higher education within their former colonies (UNESCO 1963). In short, we see unexpected evidence in support of Hypothesis 4: nations that deviate from global models tend to rapidly “correct” themselves, either on their own or sometimes under the direct auspices of the international community.

Table 2 pursues a series of more specific hypotheses. Model 8 includes a measure of tertiary growth in the *prior* decade. The expectation, stated in hypothesis 4, is that laggards will experience pressure to “catch up” and conform to world models, yielding a negative effect. Indeed, this is what we observe. Prior growth has a negative and significant effect on enrollment expansion, suggesting a tendency toward conformity among societies. This is plausibly the result of nations existing in a world with a shared global model of education and common standards of “success”. Nations deemed inadequate by global standards (embodied in reports by UNESCO for instance) tend to accelerate enrollments, while those with very high enrollments regress to the collective mean. Of course, expectations about what constitutes a “proper” level of enrollments continue to rise throughout the period, so nations follow a jagged but rapidly ascending path. This finding – of negative autocorrelation – runs sharply counter to just about any domestic argument or theory that one could think of, whether it be economic, political, or

cultural. For instance, domestic processes such as modernization or class conflict/status competition would presumably yield positive autocorrelation over time for societies. A negative effect here strongly points toward an exogenous set of influences generating isomorphism.

In Model 9, we see that the political democracy variable has a positive but non-significant effect on tertiary enrollments. We included this variable to distinguish between *national* democratization and the broader *global democratization* variable that is part of our world index. Although the effect is positive, it falls short of significance. In comparison, the effect of *global* democratization is consistently positive and significant (whether alone, or as part of the world index). In other words, education expands not because *a particular society* democratizes, but because of *global norms and discourses* about democracy and human rights. As new global models of democratic equality become taken-for-granted, even monarchial or otherwise highly undemocratic societies like Bhutan and Saudi Arabia begin to allow women, minorities, and the lower classes into tertiary education institutions.

Next, we examine the impact of state control. There are various reasons a centralized state may wish to limit enrollments: costs, strict manpower planning, desire to engage in political exclusion, and so on. Though, to be fair, many centralized regimes have used their control to engender rapid enrollment expansion – so the effect is not universal to all centralized regimes. Nevertheless, decentralized political control prevents any restriction on participation, leading to rapid enrollments – as stated in Hypothesis 6. Our very limited measure of state control over the tertiary education system, taken from

Ramirez and Rubinson (1979), has a small negative effect on educational expansion.¹⁷ In other words, states sometimes use their capacity to limit enrollment expansion and thus in decentralized societies tertiary enrollments expand more rapidly. This is consistent with the classic organizational argument used to explain the growth of science and higher education (Ben-David and Zloczower 1962; Ben-David and Collins 1966).¹⁸

Model 11 examines the specific trajectory of Soviet societies. Lenhardt and Stock (2000) and others (Stock 2003) point out that Communist countries sought to limit the growth of tertiary education in the particular period of 1970-1990. These researchers show that for most Communist countries, a generally expansive or progressive educational ideology in the period before 1970 led to high rates of educational growth around the idea of expanded opportunity for the previously-suppressed proletariat. In the period after 1970, most communist regimes put in place policies limiting higher educational growth, in order to restrain the formation of an educated elite that would undercut the authority of the Party. Indeed, we observe this to be the case: enrollments were significantly lower behind the iron curtain in this period. After 1990, of course, such controls broke down. Here, we see a third example of states rapidly “catching up” to world norms. Immediately following the demise of the Soviet Union, the former republics (including Russia) rapidly jump up in enrollments. It is especially surprising to see such a rapid rebound in Eastern Europe, given that many of those economies, weak to begin with, were seriously harmed by failed privatization schemes. The strong

¹⁷ Our measure is not time-varying, so results should be interpreted with caution. See Data, above.

¹⁸ But see Schofer 2004 for contrary evidence for the case of science. Thus, the classic argument may only apply to educational institutions.

centralized Soviet state was capable of opposing global models (as were North Korea and Taliban-era Afghanistan), but in its absence, world models flowed rapidly in, and tertiary enrollments quickly rose despite significant economic decline.

Model 12 simply includes the full set of variables – save for the effect of “prior period growth, which is excluded in models 9-12 to avoid loss of cases due to missing data in the 1900-1910 panel.¹⁹ Results of the full model are unchanged.

Corollary Analyses and Additional Methodological Checks

In addition to the analyses presented above, we conducted a range of analyses to address sources of error, bias, and additional competing explanations.

Model Specification. We examined a large number of additional control variables including: primary enrollments, autocracy, colonial history and dominant colonial power, national religion and religious composition, international trade, foreign direct investment (in the later period only, due to data availability), time-period dummies, population, world system position, and others. The inclusion of these measures did not significantly alter the interpretations presented below. We did not include them in Tables 1 & 2 either because they were not statistically significant, because they significantly reduced the sample size due to missing data, or both. Generally speaking, it makes sense that few national-level variables were found to affect tertiary enrollments, given that virtually all nations conform to the overall global trend.

¹⁹ The prior-period-growth variable is excluded merely to avoid losing cases in our first panel wave – but the effect remains negative and significant when added (not presented here; available from the authors upon request).

Female Entrance into the Higher Education. It is possible to argue that tertiary growth in the 1960s mainly represents a shift toward gender equity and the resulting incorporation of women into higher education. In principle, we agree with this and view it as one component of our argument (see discussion of democracy and human rights, above). However, question is raised: could growth be attributed *only* to increased female participation? At the outset, we are skeptical because of the sheer magnitude of enrollment growth. Nevertheless, we examined the issue by disaggregating by gender using data from UNESCO in the post-1950 period. We found a similar take-off point of enrollment acceleration in the 1960s for *both* men and women. And, regression models found similar effects across both groups. Therefore, female incorporation is not the sole source of expanded enrollments – but rather is one component of the broader social change that we seek to explain.

Discussion and Implications

Our cross-national analyses of the expansion of higher educational enrollments around the world show modest effects in conformity with several standard theories. Enrollments grow a little more in wealthy countries and in countries with expanded mass education; they are limited in Communist countries in a wave starting around 1970.

But the main effects we find are less well theorized in the literature. Enrollments increase much more rapidly in the period after World War II, and leap up in every type of country that we are able to distinguish. The increase runs throughout the period since 1960, and is obviously worldwide.

Clearly, the dominant model of the state, society, and the proper stratification system changed dramatically during this period. A world dominated by more traditional elites – landowners, business owners, political and military machines – was replaced by one in which a new set of elites (and older ones reconstructed) were built around schooled knowledge. Both the nature of authoritative knowledge, and personnel selection routines, were transformed (Meyer 1977). And this occurred, not only in the developed and core countries suggested by classical theories of both centrist and critical stripes (Kerr et al. 1960; Wallerstein 1974 and elsewhere), but in every type of country. The university becomes a central, not a specialized, institution. And levels of enrollment arise in the most peripheral areas that completely transcend anything imagined in an earlier period.

We can think of this as the triumph of optimistic rationalized ideologies – of science, democratic participation, and national development – in the contemporary world. Countries, with educated people and highly schooled elites, could build a future out of expanded “human capital” to rationally manage society. It is also possible to think of it in a more critical way, as was suggested in the prescient reflections of Cohen (1970) some decades ago. The modern world is knit together in an elite power structure of people more schooled in a cosmopolitan world culture than in their own local one, and linked more tightly to each other than to their own populations. The huge tertiary educational expansion that we have discussed clearly occurs in institutions with a great deal of isomorphism around the world. The same subjects are taught with the same perspectives leading to very similar degrees and to credentials that take on worldwide

meaning (Frank and Gabler 2004, Gabler and Frank 2004: for the example of the MBA, see Moon 2002 or Sahlin-Andersson 1998).

Local people who get a little paranoid about all this may not be entirely unreasonable. While beliefs in international power conspiracies -- black helicopters from the UN, or CIA plots from America -- may be imprecise, it is certainly true that controls fueled by higher educational expansion penetrate almost everywhere. Here customary family arrangements are undercut by elite claims about the human rights of women and children (Boyle 2002). Over there, local agricultural practices are destroyed by world ecological ideologies (Frank et al. 2000). Yonder, local production systems lose access to credit because of worldwide pressures for transparency (Drori et al. 2003). And, of course, the global penetration of neo-liberal economic policies over the last 25 years was clearly facilitated by local elites trained in contemporary economic theories (Gourinchas and Babb 2002). In each case, the culture and the elites involved are produced by a worldwide higher educational system with – as we have demonstrated – astonishing penetrative power over local society.

Whether we take a positive or a critical view, the expansion of higher education clearly produces a world in which every society has a schooled population and institutions that function as a greatly expanded set of receptor sites collecting ideas and practices from world society (Frank et al. 2000). Universities reflect the themes – and the contradictions – of world culture. They produce individuals who study neoclassical economics and wish to work for the WTO, just as they produce sociology majors who decry its evils. Yet, such people are linked by a (mostly) common cultural frame. This integrated population of individuals with common schooled status and common

information can obviously generate a great deal of global integration, as the rapidly expanding world society of associations illustrates (Boli and Thomas 1999). It can also serve as a mechanism for greatly enhanced social conflict in a world with so much actual inequality and diversity. Inequalities seen in light of a common universalistic culture and schooled stratification system are increasingly difficult to legitimate. And formerly little-noted cultural differences can sustain conflictful world movements (e.g., Boyle 2002).

Taken together, these observations have substantial import for neo-institutional research on the global system. Neo-institutionalist scholars would benefit from broadening beyond the conventional indicators of “world culture” (mainly international associations), and look more closely at educational systems as a central mechanism of enculturation and the diffusion of global models. Indeed, a few studies have already started making these connections. Schools carry fashionable world models relating to environmentalism, human rights, democracy, etc (e.g. Midling 2002; Hironaka 2004); and individual connected with schooling are likely to subscribe to global models (Boyle 2002). Thus, schooling represents much more than simply “human capital.” Schooling is a form of enculturation in common global models, and consequently represents a major and under-studied source of global social change.

Conclusion

World-wide higher educational expansion in the period since 1960 reflects a common global model of national society more than national social, economic, and cultural variations. The now-established model is one in which a wide variety of roles require higher education, and large number of the young are capable of benefiting from it.

As a result, very poor and peripheral developing countries have universities – and have enrollments higher than the most advanced countries did a few decades ago.

Since higher educational systems tend to carry a common world cultural frame, the expansion of higher education produced a world in which national elites are culturally integrated with each other. This can be seen as a form of world cultural integration, and/or as a form of global domination. And if seen as integration, it can also, like other forms of integration, be seen as likely to increase structuration, cooperation, and conflict.

References

- Baker, David. P., Helmut Köhler, and Manfred Stock. 2004. "Socialist Ideology and the Contraction of Higher Education: Institutional Consequences of State Manpower and Education Planning in the Former East Germany, 1949 to 1989." Max Planck Institute for Human Development: Berlin.
- Banks, A. S. 2001. *Cross-national time-series data archive* [dataset]. Binghamton, NY: Computer Systems Unlimited.
- Benavot, Aaron. 1992. "Educational Expansion and Economic Growth in the Modern World, 1913-1985." In Fuller, B. and R. Rubinson (eds). *The Political Construction of Education*. New York, NY: Praeger.
- Ben-David, Joseph and Abraham Zloczower. 1962. "Universities and Academic Systems in Modern Societies." *European Journal of Sociology*, 3:45-85.
- Ben-David, Joseph and Randall Collins. 1966. "Social Factors in the Origins of a New Science: The Case of Psychology." *American Sociological Review*, 31, 4:451-465.
- Berg, Ivar E. 1970. *Education and Jobs: The Great Training Robbery*. New York, NY: Praeger Publishers.
- Boli, John and George M. Thomas. 1999. *Constructing World Culture: International Nongovernmental Organizations since 1875*. Stanford, CA: Stanford University Press.
- Boli, John. 1976. *The Expansion of Nation-States, 1870-1970*. Ph.D. dissertation, Department of Sociology, Stanford University, Stanford CA.
- Boli, John. 1980. "Global Integration and the Universal Increase in State Dominance, 1910-1970." Chapter 5 (pp. 77-107) in Bergesen, Albert J. *Studies of the Modern World-System*. New York, NY: Academic Press.
- Boyle, Elizabeth H. 2002. *Female Genital Cutting: Cultural Conflict in the Global Community*. Baltimore, MD: Johns Hopkins University Press.
- Boudon, Raymond. 1973. *Education, Opportunity and Social Inequality*. New York, NY: John Wiley.
- Bourdieu, Pierre and Jean-Claude Passeron. 1977. *Reproduction in Education, Society, and Culture*. London, UK: Sage Publications.
- Bowles, Samuel and Herbert Gintis. 1976. *Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life*. New York, NY: Basic Books, Inc.

- Chabbott, Colette. 1999. "Development INGOs." In Boli, John and George Thomas (eds). *World Polity in Formation: A Century of International Non-Governmental Organization*. Stanford, CA: Stanford University Press.
- Chabbott, Colette. 2002. *Constructing Education for Development: International Organizations and Education For All*. London, UK: Taylor and Francis.
- Chabbott, Colette and Francisco Ramirez. 2000. "Development and Education." In Hallinan, Maureen (ed). *Handbook of Sociology of Education*. New York, NY: Plenum
- Chase-Dunn, Christopher. 1989. *Global Formation*. Lanham, MD: Rowman and Littlefield Publishers Inc.
- Clark, Roger. 1992. "Multinational Corporate Investment and Women's Participation in Higher Education in Noncore Nations." *Sociology of Education*, 65, 1:37-47.
- Cohen, Yehudi. 1970. "Schools and Civilization States." In J. Fischer (ed.). *The Social Sciences and the Comparative Study of Education*. Scranton, NY: Industrial Textbook Co.
- Collins, Randall. 1971. "Functional and Conflict Theories of Educational Stratification." *American Sociological Review*, 36 (1971): 1002-1019.
- Collins, Randall. 1979. *The Credential Society: An Historical Sociology of Education and Stratification*. New York: Academic Press.
- Collins, Randall. 2000. "Comparative and Historical Patterns of Education." Pp. 213-239 in M. Hallinan, ed., *Handbook of the Sociology of Education*. New York: Kluwer Academic/Plenum Publishers.
- Dale, Roger and Susan Robertson. 2002. "The Varying Effects of Regional Organizations as Subjects of Globalization of Education." *Comparative Education Review*, 46,1:10-36.
- Dent, Harold Collett. 1961. *Universities in Transition*. London, UK: Cohen and West.
- Djelic, Marie-Laure. 1998. *Exporting the American Model: The Postwar Transformation of European Business*. Oxford: Oxford University Press.
- Drori, Gili. 1997. *The National Science Agenda as a Ritual of Modern Nation-Statehood: The Consequences of National "Science for Development" Projects*. Ph.D. dissertation, Department of Sociology, Stanford University, Stanford, CA.
- Drori, Gili, John W. Meyer, Francisco O Ramirez, and Evan Schofer. 2003. *Science in the Modern World Polity: Institutionalization and Globalization*. Stanford University Press.

- Fiala, Robert, and Audri Gordon Lanford. 1987. "Educational Ideology and the World Educational Revolution, 1950-1970." *Comparative Education Review*, 31, 3: 315-32.
- Frank, David J., John W. Meyer, and David Miyahara. 1995. "The Individualist Polity and the Prevalence of Professionalized Psychology: A Cross-National Study." *American Sociological Review*, 60:360-77.
- Freeman, Richard. 1976. *The Overeducated American*. New York, NY: Academic Press.
- Frank, David J., John W. Meyer, and David Miyahara. 1995. "The Individualist Polity and the Prevalence of Professionalized Psychology: A Cross-National Study." *American Sociological Review*, 60 (3): 360-377.
- Frank, David J., Ann M. Hironaka, and Evan Schofer. 2000. "The Nation State and the Natural Environment, 1900-1995." *American Sociological Review*, 65 (Feb): 96-116.
- Frank, David John, and Jay Gabler. 2004. *Reconstructing the University: Worldwide Changes in Academic Emphases over the Twentieth Century*. Unpublished book manuscript, Department of Sociology, University of California-Irvine.
- Fuller, Bruce and Richard Rubinson (eds). 1992. *The Political Construction of Education: The State, School Expansion, and Economic Change*. New York: Praeger.
- Gabler, Jay, and David John Frank. 2004. "The Natural Sciences in the University: Change and Variation Over the Twentieth Century." Paper presented at the annual meetings of the American Sociological Association, San Francisco.
- Gourinchas, Marion Fourcade and Sarah Babb. 2002. "The Rebirth of the Liberal Creed: Paths to Neoliberalism in Four Countries." *American Journal of Sociology*, 107(9):533-79.
- Harbison, Frederick, and Charles A. Myers. 1964. *Education, manpower, and economic growth; strategies of human resource development*. New York, McGraw-Hill.
- Hironaka, Ann. 2004. "World Polity Influences on Democratization." Unpublished Working Paper.
- Hofstadter, Richard. 1963. *Anti-intellectualism in American Life*. New York, NY: Knopf.
- Horowitz, Donald L. 2000. *Ethnic Groups in Conflict*. Berkeley: University of California Press.
- Huntington, Samuel. 1968. *Political Order in Changing Societies*. New Haven, CT: Yale University Press.

Hwang, Hokyū. 2003. "Planning Development: The State, Globalization, and Shifting Locus of Planning." Ph.D. dissertation, Department of Sociology, Stanford University.

Inkeles, Alex and David Smith. 1974. *Becoming Modern: Individual Change in Six Developing Countries*. Cambridge, MA: Harvard University Press.

Institut International de la Paix. 1911. *Annuaire de la vie Internationale*. Paris, France: Institut International de la Paix.

International Association of Universities (IAU). 1998. *International Handbook of Universities*. Paris: IAU Press for the Association of Universities.

Jepperson, Ronald L. 2002. "Political Modernities: Disentangling Two Underlying Dimensions of Institutional Differentiation." *Sociological Theory* 20: 61-85.

Kerr, Clark, John Dunlop, Frederick Harbison, and Charles Myers. 1960. *Industrialism and Industrial Man*. Cambridge, MA: Harvard University Press.

Köhler, Helmut, and Manfred Stock. 2004. *Bildung nach Plan? Bildungs- und Beschäftigungssystem in der DDR 1949 bis 1989*. Opladen: Leske und Budrich.

Konrád, Georg, and Ivan Szelenyi. 1979. *The Intellectuals on the Road to Class Power*. New York : Harcourt Brace Jovanovich.

League of Nations. 1929. *Handbook of International Organizations*. Geneva, Switzerland: League of Nations.

Lenhardt, Gero and Manfred Stock. 2000. "Hochschulentwicklung und Bürgerrechte in der BRD und der DDR." *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 52:520-40.

Marshall, M. G. and Jagers, K. 2000. *Polity IV Project: Political Regime Characteristics and Transitions, 1800-1999 (dataset)*. College Park, MD: Center for International Development and Conflict Management.

Mazza, Carmelo, Kerstin Sahlin-Andersson, and Jesper Strandgaard Pedersen. 1998. "MBA: European Constructions of an American Model." *Score Report*, 1998:4, Score, Stockholm University.

McEneaney, Elizabeth. 2003. "Elements of a Primary School Science." Pp. 136-154 (Chapter 6) in Drori, Gili, John W. Meyer, Francisco O Ramirez, and Evan Schofer. 2003. *Science in the Modern World Polity: Institutionalization and Globalization*. Stanford University Press.

Meyer, John W. 1977. "The Effects of Education as an Institution." *American Journal of Sociology* 83, 1: 55-77.

- Meyer, John W. 2004. "The Nation-State as Babbitt: Global Models and National Conformity." *Contexts*, 3, 3, Summer 2004: 42-47.
- Meyer, John W., David Kamens, Aaron Benavot, and Young Kyoung Cha. 1992a. *School Knowledge for the Masses: World Models and National Primary Curricular Categories in the 20th Century*. Washington DC: Falmer Press.
- Meyer, John W., Francisco O. Ramirez, and Yasemin N. Soysal. 1992b. "World Expansion of Mass Education, 1870-1980." *Sociology of Education*, 65(April): 128-149.
- Meyer, John W., John Boli, George Thomas, and Francisco Ramirez. 1997. "World Society and the Nation-State," *American Journal of Sociology* 103:1: 144-81.
- Meyer, John W., Michael Hannan, Richard Rubinson, and George Thomas. 1979. "National Economic Development, 1950-1970: Social and Political Factors." Pp. 85-116 in John Meyer and Michael Hannan (eds.) *National Development and the World System*. University of Chicago Press.
- Meyer, John W., Francisco O. Ramirez, Richard Rubinson, and John Boli-Bennett. 1977. "The World Educational Revolution, 1950-1970." *Sociology of Education*, 50, 4:242-258.
- Meyer, John and Brian Rowan. 1977. "Institutionalized Organizations: Formal Structure as Myth and Ceremony." *American Journal of Sociology*, 83:340-363.
- Midling, Michael J. 1996. *Environmental Education in China: The Case of Secondary Schools in Sichuan Province*. Stanford University Doctoral Dissertation, School of Education.
- Moon, Hyeyoung. 2002. "The Globalization of Professional Management Education, 1881-2000." Ph.D. Dissertation, Department of Sociology, Stanford University.
- New York Times. 1899. "Teachers' Meeting Ends: Address by David S. Jordan." July 15, p. 5.
- New York Times. 1931. "Warns Germany on Overeducation: Sees Economic Waste" November 1, p. 56.
- Oneal, John R. and Bruce Russett. 1999. "Assessing the Liberal Peace with Alternative Specifications: Trade Still Reduces Conflict." *Journal of Peace Research*, 36, 4: 423-442.
- Paulsen, Friedrich. 1906[1893]. *The German Universities: Their Character and Historical Development*. New York and London: Macmillan and Co.

Ramirez, Francisco O. and Richard Rubinson. 1979. "Creating Members: The National Incorporation of Education." Chapter 5 in John Meyer and Michael Hannan (eds.) *National Development and the World System*. University of Chicago Press.

Ramirez, Francisco O., Yasemin Soysal, and Suzanne Shanahan. 1998. "The Changing Logic of Political Citizenship: Cross-National Acquisition of Women's Suffrage." *American Sociological Review*. 62: 735-745.

Reisz, Robert, and Manfred Stock. 2004. "Zwischen Expansion und Kontraktion: Zur Inklusion ins Hochschulsystem in Osteuropa 1950-2000." Institute for Higher Education Research: Wittenberg.

Riddle, Phyllis. 1990. "University and State: Political Competition and the Rise of Universities, 1200-1985." Doctoral Dissertation, School of Education, Stanford University, Stanford, CA.

Riddle, Phyllis. 1993. "Political Authority and University Formation in Europe, 1200-1800." *Sociological Perspectives*, 36, 1(Spring):45-62.

Rotberg, Robert I (ed.). 1999. *Creating Peace in Sri Lanka: Civil War and Reconciliation*. Washington, D.C.: Brookings Institution Press, 1999.

Rothblatt, Sheldon, and Bjorn Wittrock (eds.). 1993. *The European and American University Since 1800: Historical and Sociological Essays*. Cambridge, UK: Cambridge University Press.

Rubinson, Richard. 1986. "Class Formation, Politics, and Institutions: Schooling in the United States." *American Journal of Sociology*, 92 (3): 519-48.

Rubinson, Richard and Irene Brown. 1994. "Education and the Economy", p. 583-599 in Smelser, N. and R. Swedberg (eds.). *The Handbook of Economic Sociology*. Princeton, NJ: Princeton University Press.

Rubinson, Richard and Bruce Fuller. 1992. "Specifying the Effects of Education on National Economic Growth." Pp. 101-115 in Fuller B. and Rubinson R. *The Political Construction of Education*. New York, NY: Praeger.

Schofer, Evan. 2004. "Cross-national Variation in the Expansion of Western Science." *Social Forces*, 83, 1:215-247.

Schofer, Evan. 2003. "The Global Institutionalization of Geological Science, 1800-1990." *American Sociological Review*, 68 (Dec):730-759.

Schofer, Evan. 1999. "The Rationalization of Science and the Scientization of Society: International Science Organizations, 1870-1995." In Boli, John and George Thomas

(eds). *World Polity in Formation: A Century of International Non-Governmental Organization*. Stanford University Press.

Schofer, Evan and Elizabeth McEneaney. 2003. "Methodological Strategies and Tools for the Study of Globalization." Pp. 43-76 (Chapter 2) in Drori, Gili, John W. Meyer, Francisco O Ramirez, and Evan Schofer. *Science in the Modern World Polity: Institutionalization and Globalization*. Stanford University Press.

Schofer and Hironaka. Forthcoming. "World Society and Environmental Protection Outcomes." *Social Forces*.

Singer, J. David and Melvin Small. 1990. *National Material Capabilities Data, 1816-1985* [Dataset]. Ann Arbor, MI: ICSPR.

Stock, Manfred. 2003. "Hochschulexpansion in komparativer Perspektive." *Die Hochschule. Journal für Wissenschaft und Bildung* 12: 144-157.

Taylor, Charles L., and Hudson, Michael C. 1973. *World Handbook of Political and Social Indicators, 2nd Edition*. New Haven, CT: Yale University Press.

Toulmin, Stephen. 1989. *Cosmopolis*. New York: Free Press.

UNESCO. 2004. *UNESCO Online Database*. UNESCO Institute for Statistics Online Publication.

UNESCO. 2000. *Statistical Yearbook*. United Nations Publication.

UNESCO. 1963. *The Development of Higher Education in Africa*. Paris: UNESCO.

Union of International Associations. 1986, 1988, 1995, 2000. *The Yearbook of International Association*. Munchen: K. G. Saur.

Wallerstein, Immanuel M. 1974. *The Modern World-System*. New York, NY: Academic Press.

Wayman, Frank W., J. David Singer, and Gary Goertz. 1983. "Capabilities, Allocations, and Success in Militarized Disputes and Wars, 1816-1976." *International Studies Quarterly*, 27, 4:497-515.

Weinberg, Ian. 1967. *The English Public Schools: The Sociology of Elite Education*. New York, NY: Atherton Press.

Weick, Karl E. 1976. "Educational Organizations as Loosely Coupled Systems." *Administrative Science Quarterly*. 21: 1-19.

Windolf, Paul. 1997. *Expansion and Structural Change: Higher Education in Germany, the United States, and Japan*. Boulder, CO: Westview Press.

Wittrock, Bjorn. 1993. "The Modern University: The Three Transformations." Pp. 303-362 (Chapter 9) in Rothblatt, Sheldon, and Bjorn Wittrock (eds.). 1993. *The European and American University Since 1800: Historical and Sociological Essays*. Cambridge, UK: Cambridge University Press.

World Bank. 2000. *Higher Education in Developing Countries: Peril and Promise*. Published for the Task Force on Higher Education and Society. World Bank Publication.

Table 1. Random Effects GLS Pooled 10-Year Panel Regression Analyses: Higher Education Expansion, 1900-2000.

| | | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|------------------------|---------------------------------------|----------------------|--------------------|--------------------|---------------------|-------------------|
| Basic Controls | Lagged Dependent Variable | 0.90*** (0.06) | 0.91*** (0.06) | 0.91*** (0.06) | 0.92*** (0.06) | 0.90*** (0.06) |
| | No University System | 13.29** (4.66) | 10.03* (4.52) | 9.79* (4.53) | 8.65 (4.59) | 9.25* (4.50) |
| World-Level Variables | Global Democratization | 0.72** (0.29) | | | | |
| | Rise of National Development Planning | | 0.16*** (0.03) | | | |
| | Global Scientization | | | 7.88*** (1.66) | | |
| | Structuration of the World Polity | | | | 10.45*** (2.30) | |
| | Index of World-Level Variables | | | | | 3.71*** (0.77) |
| International Linkage | INGO Membership | 7.21*** (1.64) | 4.19** (1.75) | 3.90* (1.82) | 3.35* (2.03) | 3.31* (1.86) |
| Growth of Secondary Ed | Secondary Enrollment | 0.07*** (0.01) | 0.07*** (0.01) | 0.07*** (0.01) | 0.07*** (0.01) | 0.07*** (0.01) |
| Functionalism | Economic Development | 1.89** (0.77) | 2.30** (0.81) | 2.34** (0.81) | 2.34** (0.81) | 2.51** (0.82) |
| Competition & Conflict | Ethno-Linguistic Fractionalization | -0.17** (0.06) | -0.21*** (0.06) | -0.21*** (0.06) | -0.19** (0.06) | -0.22** (0.06) |
| | Constant | -50.55*** (12.09) | -19.26** (6.91) | -38.01** (6.70) | -60.91*** (8.19) | 0.92 (9.14) |
| | Observations | 687 | 687 | 687 | 687 | 687 |
| | Adjusted R-squared | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |

Robust standard errors; * p < .05, ** p < .01, *** p < .001 (one-tail for directional hypotheses noted above; otherwise two-tail test)

Table 2. Random Effects GLS Pooled 10-Year Panel Regression Analyses: Higher Education Expansion, 1900-2000, with additional nation-level controls.

| | | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 |
|--------------------------------------|------------------------------------|--------------------|-------------------|--------------------|---------------------|---------------------|
| Basic Controls | Lagged Dependent Variable | 0.90*** (0.06) | 0.90*** (0.06) | 0.89*** (0.06) | 0.92*** (0.06) | 0.90*** (0.07) |
| | No University System | 5.60 (5.11) | 7.64 (4.00) | 9.19* (4.59) | 8.81* (4.38) | 8.51* (3.84) |
| World-Level Processes | Index of World-Level Variables | 4.03*** (0.85) | 4.05*** (0.87) | 4.13*** (0.80) | 3.42*** (0.73) | 3.53*** (0.79) |
| National Linkage | INGO Membership | 2.89 (2.04) | 2.24 (1.65) | 3.22* (1.87) | 3.92* (1.86) | 4.01** (1.67) |
| Expansion of Secondary Ed | Secondary Enrollment | 0.07*** (0.01) | 0.07*** (0.01) | 0.07*** (0.01) | 0.06*** (0.01) | 0.06*** (0.01) |
| Functionalism | Economic Development | 2.22** (0.86) | 2.46** (0.83) | 2.67*** (0.84) | 2.24** (0.79) | 2.28** (0.80) |
| Competition & Conflict | Ethno-Linguistic Fractionalization | -0.23*** (0.07) | -0.22** (0.06) | -0.25*** (0.06) | -0.21** (0.06) | -0.24** (0.06) |
| Negative Inertia / "Catch-Up" Effect | Enrollment Growth in Prior Period | -0.96*** (0.22) | | | | |
| National Political Variables | Polity Democracy Score | | 0.32 (0.32) | | | -0.09 (0.31) |
| | State Control of Education | | | -0.03** (0.01) | | -0.03** (0.01) |
| | Communist * 1970-1990 | | | | -30.38** (11.16) | -25.12* (11.87) |
| | Former Communist * Post-1990 | | | | 112.18** (42.30) | 116.46** (42.21) |
| | Constant | 6.88 (10.59) | 7.23 (8.52) | 14.54 (10.49) | -1.16 (9.15) | 12.38 (9.79) |
| | Observations | 629 | 674 | 687 | 687 | 674 |
| | Adjusted R-squared | 0.81 | 0.82 | 0.82 | 0.82 | 0.83 |

Robust standard errors; * p < .05, ** p < .01, *** p < .001 (one-tail for directional hypotheses noted above; otherwise two-tail test)

Figure 1. World Tertiary Students, 1815-2000.

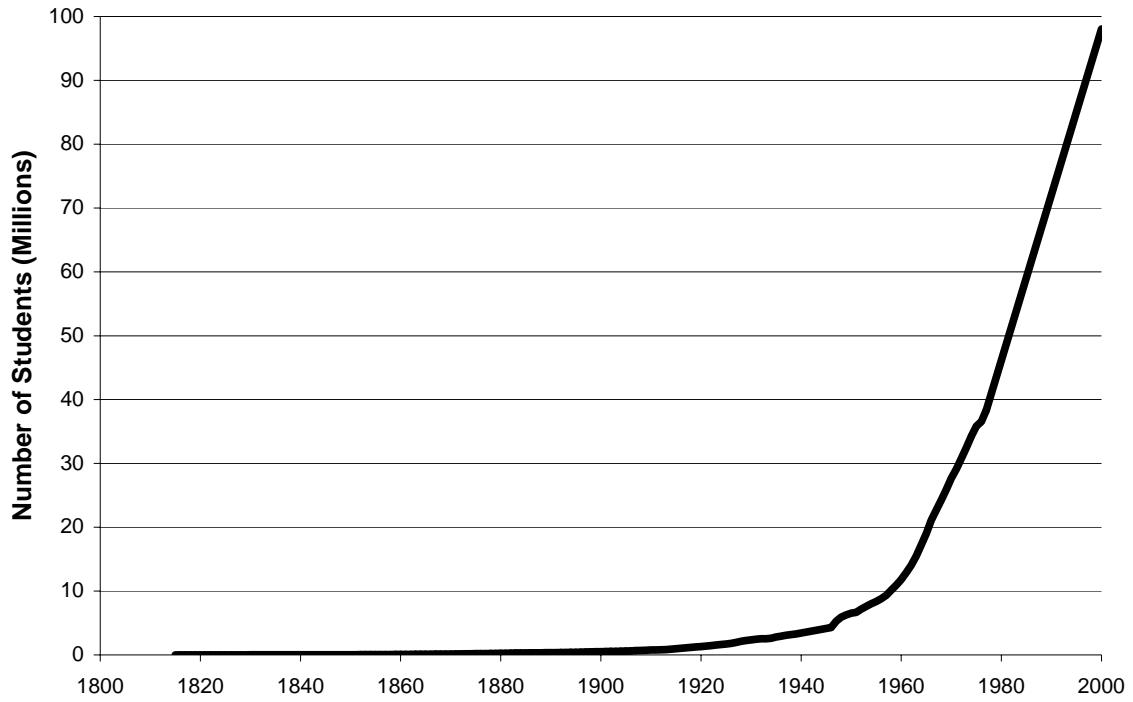


Figure 2. World Tertiary Students Per Capita, 1900-2000, by Constant-Case Groups.

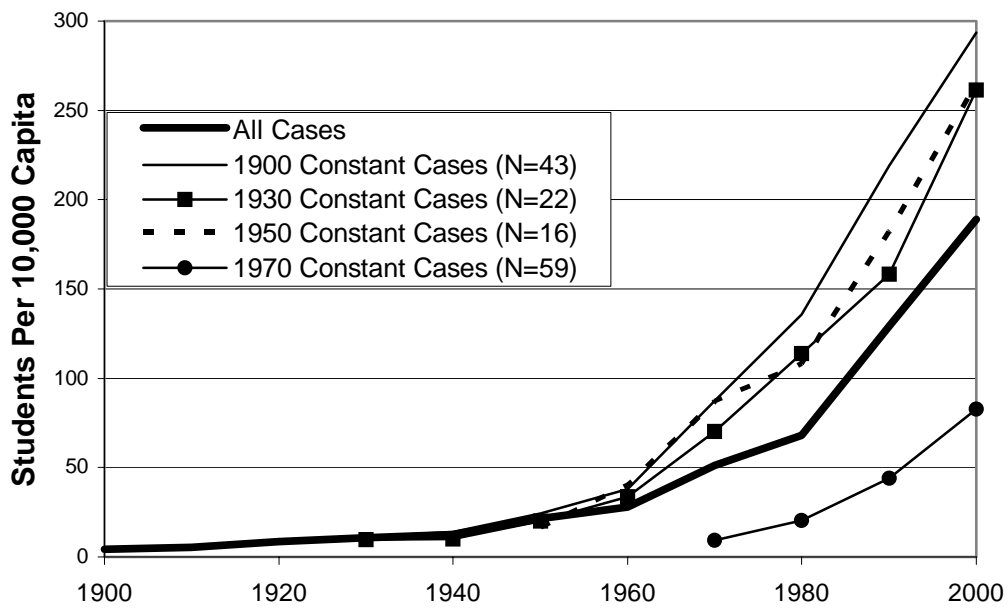


Figure 3. Tertiary Students Per Capita, Regional Averages, 1900-2000 (constant cases).

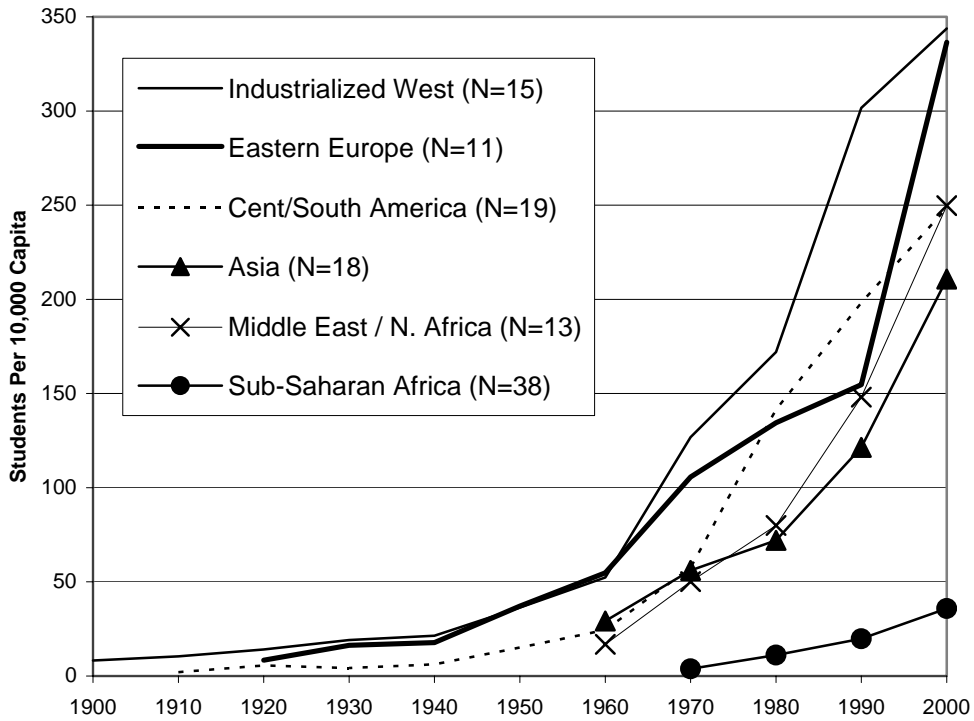


Figure 4. Tertiary Enrollment Per Capita: Selected Cases Scaled to 1990 Value.

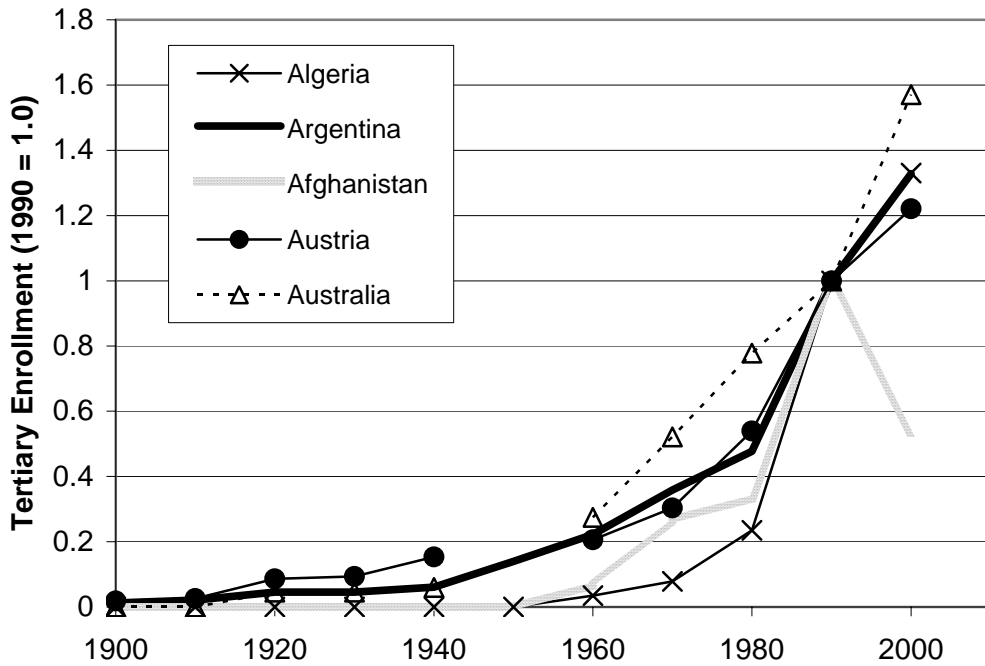
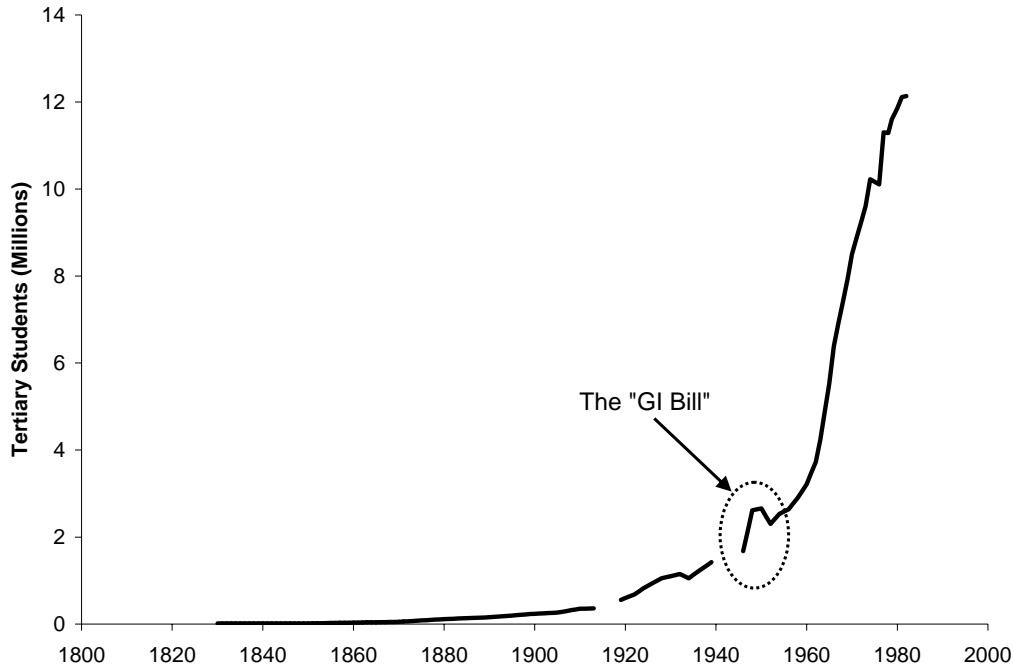


Figure 5. Tertiary Students in United States, 1820-1980.



Appendix A: Descriptive Statistics for Variables Used in Analyses.

| Variable | Mean | Std. Dev. | Min. | Max. | N |
|--|--------|-----------|-------|---------|-----|
| Higher education enrollments per 10,000 capita (t+10) | 80.33 | 109.98 | 0 | 640.77 | 687 |
| Higher education enrollments per 10,000 capita (t) | 50.14 | 77.52 | 0 | 559.1 | 687 |
| Iron and Steel Production, per capita | 3.13 | 3.80 | 0 | 11.997 | 687 |
| INGO Memberships, log | 5.06 | 1.502 | 0 | 7.90 | 687 |
| Secondary School Enrollments, per 10,000 capita | 260.86 | 288.63 | 0 | 1446.35 | 687 |
| Ethno-Linguistic Fractionalization | 33.73 | 26.59 | 0 | 92.60 | 687 |
| No University System (Floor Dummy) | .154 | .361 | 0 | 1 | 687 |
| Global Scientization | 4.16 | 1.21 | 1.61 | 5.62 | 687 |
| Global Democratization | 38.17 | 8.88 | 25.45 | 56.83 | 687 |
| Rise of National Development Planning | 80.17 | 59.49 | 0 | 139 | 687 |
| Structuration of the World Polity | 5.45 | .836 | 3.99 | 6.40 | 687 |
| Index: Scientization, Democratization, Development Planning, Structuration | -.527 | 3.09 | -6.10 | 3.85 | 687 |
| National Democracy | -.297 | 7.39 | -10 | 10 | 674 |
| Enrollment growth in prior period | 1.88 | 6.07 | -1 | 102.3 | 629 |
| State control of higher education | 396.56 | 144.89 | 17 | 640 | 687 |
| Communist society (dummy) | .020 | .141 | 0 | 1 | 687 |
| Former communist society (dummy) | .008 | .093 | 0 | 1 | 687 |