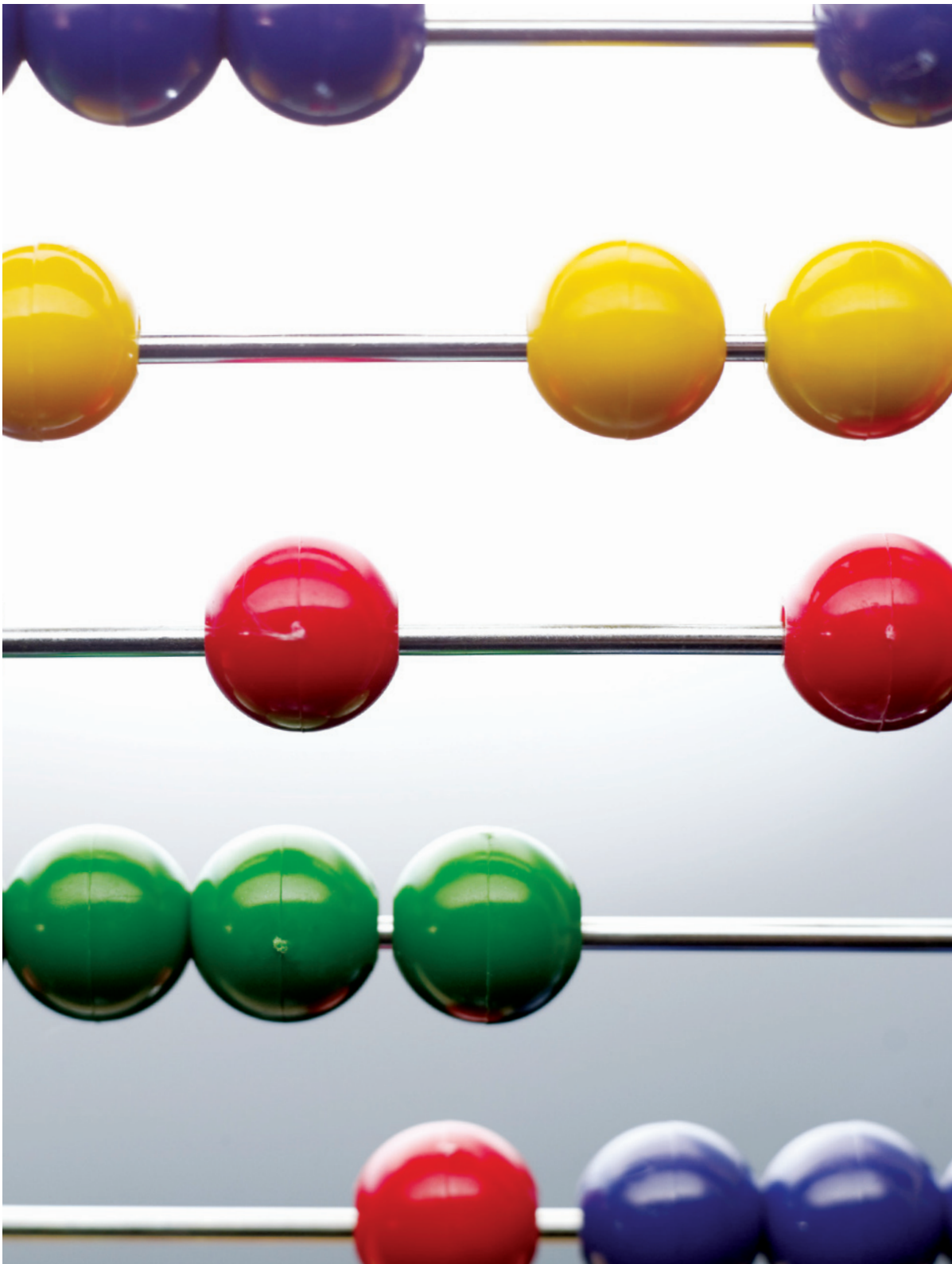
The Spaces Between Numbers:
Getting International Data on Higher Education Straight

BY CLIFFORD ADELMAN



November 2009

A REPORT BY
Institute for Higher Education Policy

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NOVEMBER 2009

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Acknowledgments

The author first thanks two dozen individuals in 13 countries for the generosity of their time, information, and instruction in matters relating to both higher education data produced in their countries and comparative higher education data presentations. He is also grateful to the Association for Institutional Research (AIR) for featuring the topic addressed in these pages at the opening plenary session of its 2009 forum in Atlanta, Ga., and the chance that forum presented for reviewing data issues and documents with international participants. Prior to the AIR forum, portions of this analysis were tried out in papers presented at the 2007 Forum of the European Association for Institutional Research (EAIR) in Innsbruck, Austria, and at the 2008 annual meeting of the program for International Management in Higher Education (IMHE) in Paris, France, and the author expresses thanks to these organizations for those opportunities.

At the Institute for Higher Education Policy (IHEP), the author appreciates the support and critiques of Alisa F. Cunningham, vice president of research and programs, the finely-honed feedback of Gregory Kienzl, director of research and evaluation, Jennifer Ramsey, research project manager, and Tia T. Gordon, communications and marketing consultant in whose fine hands the creation of all IHEP publications lie.

This report was made possible through the generous support of the Lumina Foundation for Education, which, through its staff and Research Advisory Committee, provided spirited interchanges on topics both directly and indirectly related to this inquiry.

Finally, the analysis, opinions, and conclusions expressed herein are those of the author, and do not necessarily represent the positions, opinions, or policies of either IHEP or the Lumina Foundation for Education.

Web Availability

This document, a longer version of this document, and supplementary tables and references are available in electronic form via IHEP's Web site at www.ihep.org/research/GlobalPerformance.cfm.

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Executive Summary

This essay seeks to answer four questions about data we use every day in comparing higher education in the United States with that in other countries, particularly the 30 advanced post-industrial democracies, including the United States, that are members of the Organization for Economic Cooperation and Development (OECD).

- Why does policy-support research and commentary seek to compare national higher education systems in terms of student participation and attainment?
- What do we find when we start assembling all the numbers and tables addressing these markers that are produced by both international organizations and national statistical agencies and ministries?
- Does what we find tell a story that helps all nations participating in the measurements address their primary objectives for their higher education systems?
- If not, then what changes and additions to our international data gathering and comparisons would provide that assistance?

While all countries produce data on their higher education system's enrollments and degrees awarded, they do so in different ways, and sometimes with different definitions conditioned by language, culture, and tradition. On the surface, their data are often not comparable. The shaping of these data and the analysis of comparability is performed by four international organizations: the World Bank, UNESCO's statistical unit, Eurostat (the statistical agency for the 27 countries of the European Union), and OECD. This essay uses comparability data from all four of those sources, but focuses principally on the printed version OECD's annual *Education at a Glance*, the document that is most often invoked by those who believe that, compared to other advanced post-industrial democracies, the United States is doing poorly and losing ground in higher education attainment. This essay confronts the negative propaganda about the comparative performance of the United States because the propaganda is problematic.

Correcting Negative Propaganda

The first piece of negative propaganda stems from the core table on attainment in the printed version of *Education at a Glance 2008*. Critics either didn't know how to read the core table on attainment in *Education at a Glance 2008* or they knew how to read it but didn't want to report what the printed document really says:

- In the proportion of populations earning bachelor's degrees or their equivalent, the United States ranked #1 among 30 OECD countries in every age group except 25–34, where we ranked #2.

Before OECD put up, online, another version of this table, those who bemoan our position in the higher education world chose a different column, on which to focus: one that includes associate's degrees, where, indeed, we do not perform well. The reason is simple: other OECD countries that award what are called "short-cycle" degrees (Belgium, Canada, Denmark, France, Ireland, Japan, Korea, the Netherlands, and United Kingdom) have institutions and programs devoted solely to that task and no other, whereas our community colleges have taken on a plethora of missions and student populations who are not degree candidates, and are under greater pressure to transfer students to the

four-year sector with or without associate's degrees. And when you mix bad performance for associate's degrees with top-of-the-line performance for bachelor's degrees, you purposefully distort what happens in U.S. higher education and why.

The second piece of negative propaganda used by critics of our higher education system is based on another table in *Education at a Glance 2008* that purports to display graduation rates (technically, "cohort survival" rates) for those seeking a bachelor's (or equivalent) degree. There are 24 OECD countries compared in this table, where the U.S. graduation rate is indicated at 56 percent within six years of entry to higher education, the second lowest among the 24 countries. What OECD does *not* tell the reader is that:

- The U.S. graduation rate is the *only* rate among the 24 to be calculated only if students graduated at the same institution in which they began. All the other countries present system graduation rates.

- When we submitted a *system* graduation rate, i.e., you are counted no matter where you graduated—not 56 percent but 63 percent—it was buried in an appendix to *Education at a Glance 2008* that is only available online.

- In that appendix entry, our data were dismissed as "old," even though seven other countries in the table used the same starting year for their calculations. The fact that "1995–96 for a starting date is acceptable for Sweden, for example, and not acceptable for the United States is a mystery.

There are many other problems with this presentation, and the essay demonstrates considerable divergences between OECD graduation rates and the same rates found in the publications and on the Web sites of national statistical agencies.

Economics and Demography

The second part of the essay deals with two critical frameworks for justifying, shaping, and interpreting comparative higher education data. The review of the economic literature concludes that:

- No simple relationship between education and economic growth can be isolated and defended. Educational attainment is a weak proxy, and we ought to be more modest in our claims.

- Content and quality are missing from educational attainment data, and without these measures, the data are meaningless.

- Even in the relationship between level of education and personal income there is a black box called "occupation" that must be accounted for, and this means post-degree history, something we rarely see in international comparative data on higher education.

Demographics are the most under-rated factors in the presentation and interpretation of comparative international data. And the most important demographic data for higher education lie in the age distribution of national populations, current and projected. The essay reviews the current and projected basic demographics (fertility, net migration, and growth rates) for 30 countries, highlighting projections for the 25–34 age group in 2025. It points out that:

- The United States lives on a different planet from the other 29 countries. Not only are we the largest ship in the harbor, but our population (denominator) is growing, while the populations of most other nations will either remain flat or decline (in some cases, drastically) through 2025.

- One doesn't need more than fourth grade mathematics to understand how population growth/decline will affect measurements of higher education participation and completion: countries with dramatically falling denominators (e.g., Japan, Russia, Poland) will see all their percentages rise; those with rising denominators (United States, Australia, Canada, and Ireland) will see all their percentages fall.

- Hence, the #1 rank of the United States in the proportion of our population that has earned bachelor's degrees will not last without radical interventions. Our coming fall will be a simple consequence of comparative demographics.

What Do We Find When We Examine the Input Data and Markers?

We find, first, a very complex and confusing international classification system for education programs called ISCED (International Standard Classification of Education) that is particularly baffling at the levels of the classification system that deal with both what is known as "tertiary" (higher) education and a level labeled "postsecondary but not tertiary." While the ISCED system is under deserved revision, it still governs the presentation of international comparative data, and U.S. higher education officials cannot avoid learning about it and its dissonances, a number of which are illustrated.

Second, the question of who gets counted, even when all nations submitting data are supposed to observe the same rules, winds up in fog:

- "Beginning students" turn out, in some countries, to have previously attended—and even to have earned lesser higher education credentials than their current level of study.

- Some countries (e.g., Canada) can't tell anyone how many first-time students they have in their higher education systems.

- "Graduating students" turn out to be whatever a country says they are. We find "expected success rates," "survival rates," and "completion rates" and are not sure what is what.

- Some countries count "postsecondary but not tertiary" credentials, i.e., trade school certificates, as higher education degrees.

- Constructs such as UNESCO's "Gross Enrollment Ratio" are so poorly designed as to produce wildly inflated estimates.

- The definition and counting of what we would call "foreign students," a significant portion of enrollees and degree recipients in a number of OECD countries (e.g., Australia, France, Germany, the Netherlands, New Zealand, and United Kingdom), is highly variable despite international guidelines.

In other words, there is too little meaning and too much variance in the credibility of these data.

What do the International Reporting Organizations Do in the Face of This Variability?

The international organizations responsible for comparative indicators are hardly ignorant of the problems they face in the variability of data they receive. They then valiantly try to reshape the data through templates based on artificial constructs, e.g., "notional age," and formulas—"synthetic age ratio" and "virtual age cohort ratio"—that ironically only create more fog. For example:

- In the matter of graduation rates, the formulas assume that all degree programs at a given level in a given national system are of the same theoretical duration. This approach decidedly does not work when national systems offer three-year, four-year, and five-year bachelor's degrees, depending on the field of study.

- It is difficult to say what the "ratio" results mean if the underlying age bracket dynamics differ between countries that experienced population spurts (Ireland), dramatic expansions of their higher education systems (Finland), or temporary contractions of higher education systems when tuition was introduced (Austria).

Synthetic and virtual ratios do not smooth out these bumps in the road.

Slouching Toward Future Data: What Do We Have to Think Better About?

Two large, related policy areas in every country are either obscured or missing from indicators of national educational attainment, and have to be on the docket for future incorporation:

1. The role of secondary school structures and processes. A plurality of OECD countries have what we would call "tracking" systems in secondary education, under which student trajectories, some of which do not lead easily to higher education, are determined early. These tracks affect the way one should judge the through-puts of the higher education system, as they determine a "qualifying" population and a non-qualifying population that is subject to a different kind of analysis rooted in models of lifelong learning and potential later entry points through non-traditional routes. National examinations (principally high school exit; but, in a few cases, e.g., Portugal, Finland, and Japan, the principal determinant of college entrance) are of interest in terms of the way they sort and direct students within their national systems. The sortings of "qualified" populations are not dichotomous affairs: there is no question that students evidencing low levels of literacy as teenagers are considered truly "disadvantaged," and require a different set of interventions than non-qualifiers who can later take advantage of second chance options. None of the current comparative educational indicators, though, illuminate the volume of those who take alternative routes into the tertiary system, and thus by-pass critical measures of inclusion.

2. Looking for inclusiveness. The United States is not alone in seeking greater inclusiveness in higher education. Virtually all OECD countries look for underrepresented populations, and devise strategies to increase their participation in higher education. The definition and accounting for these populations, however, differs by world area, and sometimes, by country. International comparative data, then, appear impossible to construct.

Analysts of U.S. higher education confine their representation questions principally by income and race/ethnicity. The reason for our concern with participation and completion rates for low-income students is fairly simple: there is a dollar sign on every college door, often followed by a substantial net price. In most other OECD countries (save Canada, Japan, and Korea), this cost is not an issue since tuition is either free or minimal. One is not surprised by high "access" rates in Finland and Sweden, for example, where tuition is an unthinkable concept. And because we are a nation of immigrants (most other OECD countries are not), in which the collective racial/ethnic minority population is on track to become the majority population, we naturally seek inclusion of discrete minority populations and track them closely in our national data.

But the national data systems in the United States have something to learn from the ways in which some nations pinpoint low-participating populations in higher education: by geocoding. Though geodemographic analysis doesn't always mean that one will find what one expects to find, it certainly provides a GPS-type guide to those getting in their cars to go out and fix a problem. More to the point of developing comparative data indicators that address a policy priority, geodemographic analysis is appealing because it is built on relatively common definitions across borders.

Can We Fill the Spaces Between the Numbers?

This essay makes a number of suggestions for reconstructing and filling in the spaces of our existing presentations of international comparative data on higher education. Governed by principles of simplicity, "condensed comprehensiveness," and meaningfulness, they include:

- Setting one set of participation ratios to the reference point of a "qualifying" population, hence opening up the potential for improving flexibility indicators of later participation by the non-qualifying population.

- As participation is the primary category under which inclusiveness data can and should be set, international organizations reporting comparative data should establish data and reporting standards for isolated populations, students with disabilities, and resident ethnic minority populations, along with a new set of parameters for reporting family income by national quintiles.

- Establishing "penetrability" indicators of student movement from short-cycle to bachelor's level and from bachelor's level to graduate levels.

- In tables marking attainment or graduation rates, including a marker indicating whether the country in question has implemented a Qualifications Framework (QF) for its degrees. National QFs are required under the Bologna Process, and OECD countries outside Europe (e.g., Australia) have developed them as well.

- Program delivery indicators marking the penetration of eLearning technologies. This is a complex but absolutely necessary territory that is absent from current reporting, and that will also prove to be a measure of inclusion.

- While Eurostudent and Eurostat reporting have started to mark the volume of non-traditional points of entry to higher education (another part of the inclusiveness agenda), we need international negotiations to cover a wider range of pathways than currently employed.

The United States is not exempt from these reforms, and, with respect to what we submit to the international organizations generating comparative data tables, the following is suggested:

- We send only system—and not institutional—graduation rates, and use our Beginning Postsecondary Students longitudinal studies for that purpose; and

- More radically, re-scope all our sub-baccalaureate populations by program status under a revised ISCED system so that our wholly remedial students are classified as upper-secondary school and our workforce development certificate candidates are classified as "postsecondary-but-not-higher education." The residual group would be considered true degree candidates, and that is the population of interest in international data.

Not all questions concerning international comparative data on higher education are addressed in this report.[1] Issues such as comparative production of degrees, by discipline, were set aside for future investigation. And both systematic inclusion and scrutiny of higher education data from non-OECD countries are only a matter of time.

[1] However, for deeper analysis see www.ihep.org/research/GlobalPerformance.cfm for a longer version of this essay and related materials.

Supplementary Online Material

A longer and more detailed version of this essay can be found online at the IHEP Web site for the Global Performance project: www.ihep.org/research/GlobalPerformance.cfm. This web site also hosts additional information that was used in the course of this research, in a special folder labeled "International Comparative Data: Supplementary Material" that includes the following:

1) **Non-country-specific references.** The references for both short and long versions of this essay are divided in two lists: country-specific and non-country specific. All country-specific documents consulted and/or cited in the text are to be found only online.

2) **Supplementary tables.** These tables, on topics raised in the text, could not be included in the text without disrupting the flow of analysis.

Abbreviations and Special Terms Used in the Text

BFUG	Bologna Follow-up Group
EAG	Education at a Glance 2008; annual report of comparative data from OECD
EC	European Commission
EU	European Union
HEI	Higher Education Institution
IPEDS	Integrated Postsecondary Education Data System (annual collection in the United States)
ISCED	International Standard Classification of Education
LFS	Labor Force Survey
LIS	Luxembourg Income Survey
OECD	Organization for Economic Cooperative Development
Tertiary Education	Higher Education
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UOE	UNESCO, OECD, and Eurostat (as joint authors)
5A	ISCED category for bachelor's degree programs and their equivalents
5B	ISCED category for associate's degree programs and their equivalents

Introduction

"First you have the natural numbers. The ones that are whole and positive. The numbers of a small child. But human consciousness expands. The child discovers a sense of longing. The negative numbers. The formalization of the feeling that you are missing something...and the child discovers the in between spaces. Between stones, between pieces of moss on the stones, between people. And between numbers...it leads to fractions. Whole numbers plus fractions produce rational numbers. And human consciousness does not stop there...it adds an operation as absurd as the extraction of roots. And produces irrational numbers...it's a form of madness...and by adding irrational numbers to rational numbers, you get real numbers...and it doesn't stop. It never stops."
—Peter Hoeg, *Smilla's Sense of Snow*, pp. 121–122.

So it is with numbers, and this essay will try to make sense of a series that never ends. It takes a critical stance toward the comparative international data on higher education that we currently possess and use, and, after considerable explication and analysis, makes some suggestions for rendering those data more convincing, more meaningful, more useful to higher education planners and policymakers, and less burdened by footnotes that are almost never read.

This journey began with the Institute for Higher Education Policy's work on the massive restructuring of higher education across 46 nations in Europe known as the Bologna Process. At the end of that investigation[2] we were not alone in observing the paucity and inconsistency of data on what would matter most to judging the success of the historic Bologna undertaking: what happens to students, both current and potential, and which countries were ahead of schedule, on-schedule, and lagging in producing the complex set of outcomes sought under the Bologna reforms.

We then turned to the existing comparative international data on higher education, particularly as presented by the Organization for Economic Cooperation and Development (OECD) in the well-known annual *Education at a Glance* (*EAG*), and also by the United Nations Educational, Scientific and Cultural Organization (UNESCO), World Bank, and Eurostat (the central statistics agency for the 27 countries of the European Union). Certainly, one would think, this international data could help fill in the blanks.

[2] For the most comprehensive of the results of this work, see Adelman C. 2009. *The Bologna Process for U.S. Eyes: Re-learning Higher Education in the Age of Convergence* at www.ihep.org/research/GlobalPerformance.cfm.

Instantly, the scope of the search encompassed countries outside of the Bologna Process, including the United States, and, simultaneously, involved data reports and online table generators from national statistical agencies and ministries, many of which are not presented in English.[3] There are 30 countries in the OECD, 23 of which are also Bologna Process countries, so the overlap was felicitous to the inquiry. What, in brief, did we find?

- A mess, and this essay will share the highlights of that mess;
- Creative efforts by the international agencies to leap over the mess, but with problematic results, and this essay will share both the challenges to the international agencies and the fog they generate;
- Misreading and misuse of the existing data on the attainment of the U.S. population and its students as presented in the international comparative accounts, particularly *EAG 2008*.

Our focus and inquiry expanded, in turn, to larger questions concerning the quality, meaning, and use of international comparative data on higher education. This is not an academic exercise.

[3] With resident competence, translation assistance, and correspondence with colleagues abroad and officials at other nation's ministries and statistical agencies, language was not an issue. For a list of those who kindly assisted, translated, and/or clarified terms and their application, see Appendix B.

What Will This Essay Do?

Departing from previous helpful work on this playing field (Kaiser and O'Heron 2005; Wellman 2008), this essay will:

1. Offer some explanations concerning why all nations collect at least some data on basic higher education variables in the first place and why we try to compare those data. This discussion is grounded in consideration of economic rationales and the work of noted economists who have investigated relationships between education and macro-economic indicators.

2. Provide some serious consideration of demographic factors that should influence our interpretation of comparative higher education data. Population growth and decline is very much part of the background tapestry for interpreting population ratio presentations, and one does not need more than fourth grade mathematics to sober one's interpretation of change or projected change. We will find, in the course of these considerations, why age is one of the most important variables in international higher education comparison, though one we hear little about from the U.S. commentariat.

3. Review the basic terms, templates, and definitions used in comparative data statements about higher education, e.g., "what is 'tertiary education'?" "What is a credential?" and "Who and what do we count?" These sound like easy questions. They aren't. At the core of these difficulties lies a flawed international classification system for academic programs and credentials called the International Standard Classification of Education (ISCED), the conundrums of which ripple throughout the analysis.

4. Describe the sources and difficulties of the data used: reports and online table generators of national ministries and statistical agencies in 19 countries[4] and four international organizations that attempt to set common grids of reporting over the data produced by national ministries and statistical agencies,[5] even when the agencies themselves are not wholly happy with some of the reported results, a sentiment well reflected in EAG's footnotes. Somewhere in the course of these explications, the reader will begin to experience numerical dizziness.

5. Indicate why "population ratios" (the percentage of a particular portion of national populations, e.g., 18–24 year-olds or 25–34 year-olds) and "synthetic cohorts" (age groups built around theoretical ages for higher education entry or completion) are used by OECD and UNESCO in particular, and then suggest the ways in which very basic demographic data should serve as a guide to interpretation of these ratios, particularly when time-series (e.g., "In 1995 it was X; in 2005 it was Y") statements are at issue.

6. Briefly review the effects of secondary school structures and pathways on tertiary participation. How does one represent and fairly judge postsecondary access across systems with different structural lines, multiple types of secondary schools and what we would call "tracking" mechanisms? Secondary school filters are as important—and as overlooked—as student age in evaluating comparative higher education data.

7. Examine the definition of populations targeted to produce both (a) a more equitable distribution of participation and completion, and (b) increased participation and completion. The United States is not alone in looking for and improving rates of access, participation, and completion among what we call "under-served" populations. How do we define those populations—and why? How do other nations define them—and why? There are considerable differences here, and we have something to learn from other countries on this account.

8. This last item leads into our conclusions and recommendations for what might produce more enlightening and constructive international data on higher education than those currently employed. Just as the 46 countries participating in the Bologna Process have worked toward a greater degree of "convergence" in structures and practices, so we look toward a greater degree of convergence in matters of the numbers that lie behind discourse in a world without borders. This essay is not alone in expressing these sentiments or suggesting alternatives: OECD's Indicators of Educational Systems (INES) group is working to improve both the input data and indicator construction for both entry and

[4] Australia, Austria, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Scotland, the rest of the United Kingdom (they have separate education authorities), and the United States. All of these are among the 30 core members of OECD, and all offer accessible data, whether in their native languages, English, or both.

[5] Eurostat, which covers the 27 countries of the European Union; the Organization of Economic Cooperation and Development (OECD), which covers 30 economically advanced democracies (and, occasionally, other "partner" countries), and both UNESCO and the World Bank, which cover everybody.

graduation rates; Eurostat is particularly self-reflective and self-corrective; and UNESCO, which crafted ISCED in 1997, is working on long-overdue revisions to that system. It's not that we can tame numbers or that their frames and conditions are immutable, rather that we can all do better to shape them toward attainment of common ends, and to improve "the message content of statistical statements" (Gilomen 2002, p. 46). That's the positive note on which this essay will finish.

But Let Us Straighten Out the Core Propaganda Before We Begin

An all-too-common rhetorical convention of reports and declarations on the status of U.S. higher education is to open with a statement that compares our participation and degree completion rates to those of other economically advanced countries—and always to our disfavor. It's a way to stir up the competitive juices: we have to be number one—or close to it—or, it is said, our future economic life is at risk. One can cite these reports and statements by the dozens—no, make it hundreds.

Will it surprise anyone in the house that other countries with advanced economies utter similar statements and claim that the United States is ahead of them in higher education? For example, the European Commission (EC) has bemoaned the fact that the "average gross enrollment ratio" in higher education for 18–24 year olds in the United States is 81 percent versus 52 percent in the European Union and 49 percent in Japan (European Commission 2005, p. 3). Setting aside for now what "gross enrollment ratio" means, the EC seems to be joining us in a rhetorical race to the bottom.

This essay will not spend time addressing all the problems with this rhetoric or its problematic assumptions. We note only: (1) there are no longer rigid national borders in global economic life, so the notion of what the Japanese used to call *ichi ban* (number one) is rather passé; in fact, if other countries are doing better than previously, then we all are doing better; (2) economists have presented a mixed judgment of the relationship between national levels of education, on the one hand, and productivity, productivity growth, and economic *growth*, on the other, and we ought to be more modest in our claims; (3) the idea of one country "ranking" higher than another (even when the differences are negligible and statistical significance impossible to prove, e.g., 42 percent of something versus 39 percent) is a moot exercise;[6] and (4) among advanced post-industrial democracies, the country with one of the lowest levels of higher education attainment, Germany, maintains a fairly robust economy, even in our difficult times. One does not need more than a degree in common sense for these observations. Enough said.

[6] The education portion of the United Nations' Human Development Index (HDI) is even more egregious on this count with scores ranging from 0.946 to 0.993 for its top ranked nations. We're not sure what these scores mean and whether the differences are either statistically or substantively meaningful. The United States, by the way, is "ranked" 5th—whatever that means. Do we brag that our 0.971 "beat" Russia's 0.956? Or, weep that it "lost" to Korea's 0.980?

Truth and Consequences: The Propaganda of Numbers

From every corner of the U.S. policy world it has been declared that we have "fallen" in our international position in higher education from 1st to 7th or 10th or some other dismal rank in the universe of 30 advanced post-industrial democracies that are members of OECD, and that the attainments of our younger generations do not match those of their elders. The metrics on which this collapse has taken place, it is said, run from access to completion rates, and particularly the latter. The claimants base their assertions—so they say—on the bible of international education data comparisons, OECD's annual *EAG*.

But as soon as one opens the printed 2008 edition of *EAG* and reads the tables for a core issue—such as the percentage of the population that has earned higher education credentials—it is obvious that the claims are *rather problematic* in the context of normal U.S. discourse on these matters!

This essay refers to the printed versions of *Education at a Glance*, not the online "Whoops! We made some mistakes" versions issued, without fanfare, three months later. The printed versions, after all, are what moves messages immediately into the propaganda environment.

Take, as the primary case, the presentation of the highest credential earned by age group (*EAG 2008*, Table A1.3a, p. 44).[7] In our normal discourse, a "college degree" equals the bachelor's, and bachelor's degree attainment rates are the Dow Jones Industrial Average of U.S. higher education. In Table A1.3a, this level of attainment is referred to as "Tertiary-type A and Advanced research programs," i.e., bachelor's and higher. *EAG* presents these by what this essay calls a "census population ratio." By age bracket and percentage of the population within that bracket who had earned at least a bachelor's degree by

[7] The title of the table, "Population that has *attained* tertiary education," is somewhat ambiguous. The data come from each country's labor force survey under what are called UOE rules, and can include tertiary credentials earned-but-not-awarded. Some national system data reports, e.g., Sweden, make this distinction, e.g., students who have completed the requisite credits but who have yet to pass their final, degree-qualifying assessments.

[8] This essay was written prior to the release of the 2009 edition of EAG, which repeats this table using 2007 data. Using printed versions of EAG only, the U.S. percentages change so dramatically (e.g., from 33 to 30 percent of the 55–64 age group; from 34 to 30 percent of the 45–54 age group; from 36 to 33 percent of the 35–44 age group) that one would think our bachelor's degree holders (the numerator) are dying at rates far above the rest of the population or that we experienced a massive immigration of unschooled middle-aged people (the denominator) in 2007–or both. The table has us tied for 7th place with Sweden and Australia at 31 percent, just below a group of Bologna countries (Denmark, Finland, the Netherlands), which had changed over to the new three-year degree cycles. As this essay notes below, our 2008 position is not likely to last–and the reasons are obvious: demography and Bologna.

TABLE 1

U.S. Rank Among 30 OECD Countries in the Proportion of the Population with Bachelor's or Higher Degrees, by Age Bracket, 2006

	AGE 55 TO 64	AGE 45 TO 54	AGE 35 TO 44	AGE 25 TO 34
Proportion of U.S. population with bachelor's or higher degree	33%	34%	36%	35%
Rank	1st	1st	1st	2nd

SOURCE: OECD, *EDUCATION AT A GLANCE 2008*, TABLE A1.3A (P. 44)

2006, a second grader could read Table A1.3A and see the U.S. rank among the 30 OECD countries as is displayed in **TABLE 1**.[8] By what perverse alchemy do we convert this to decline and dissolution?

Other countries' statistical reports can read this annual column very clearly (e.g., Swiss Federal Statistical Office 2006; Bradley et al [Australia] 2008), but our commentariat does not bother to read it at all. The drum-pounders prefer to ignore our conventional reference points, tossing out the Dow Jones, and replacing it with another column in Table A1.3a: a column including all degrees awarded, including sub-baccalaureate credentials, particularly associate's degrees.

Not all OECD countries' higher education systems grant sub-baccalaureate *degrees*. When they do, the degrees are generally called "short-cycle" and are labeled within the traditions of the country at issue. Some are offered by the same institutions that grant the equivalent of bachelor's degrees (e.g., the *hogescholen* in the Netherlands); some are considered part of the bachelor's degree. In England, the Foundation Degree is offered jointly by universities and Further Education Colleges; in France, the short-cycle *Diplôme universitaire de technologie* (DUT) is offered by institutions that are married to universities across the street. The production of these degrees is particularly strong in Belgium, Canada, France, Japan, Korea, New Zealand, and a half dozen others, powered by institutions whose principal job is to produce those credentials. OECD is very explicit about this, though our avatars of grief choose not to pay attention. They engage in what economists call "confirmation bias," selecting evidence that supports what they want to believe or juggling statistics until they yield an answer that confirms their beliefs. Why do they want to believe that the United States is doing poorly in higher education and using degree production as the measure? To rouse us from an otherwise complacent sleep? We'll leave that speculation for another day.

The production of sub-baccalaureate degrees is particularly weak in the United States, primarily because their principal agent, the community college, has taken on many tasks that comparable institutions in other countries have not assumed, and is under more pressure to facilitate transfer to a four-year college than to generate associate's degrees. Thus, Hauptman and Kim (2009) argue for greater degree production by our community colleges as the principal route to raising our composite international position in attainment. That argument is beside the point here, but there is no question that if our sole interest was in producing more degrees for the sake of a ranking in Table A1.3a of *EAG 2008*, we would forget bachelor's degrees and push hard at the associate's level. This essay does not deal in such proposed reconstructions: it is sharply focused on the data itself and its contexts.

Note: For purposes of this initial air cleaning in the face of negative propaganda, the validity of the census population ratio as a method of international comparison is provisionally accepted. By the time this essay concludes, the reader should consider these ratios—and the ranking statements to which they lead—to be but fractional measures of human capital. The standings of athletic teams offer more content.

So if we are to quote the bible of comparative international data to assess our national standing, let's get the chapter and verse correct and clear:

- The United States does very well with population ratios of bachelor's degree attainment; in fact, *at least for now*, ranks rather high;
- The United States does **not** do very well with population ratios covering all undergraduate higher education credentials.

The second charge leveled against U.S. higher education, and on the basis of a table in *EAG 2008*, at least focuses wholly on the Dow Jones Industrial Average of higher education: our macro bachelor's degree completion rate, compared with those of other countries, is miserable! Let us grant that we can—and should—do better, regardless of what other countries do. But this is a more complex case, and one that reveals some "prejudices" in OECD's presentation.

The methodology that brings us closest to details of student pathways is the longitudinal study, which stripped of all its other knowledge, and converted to the job of generating a completion rate indicator, is what shorthand calls a "cohort survival" account. Drop-out studies (e.g., Heublein, Schmelzer, and Sommer 2005 for Germany; Morgan, Flanagan and Kellaghan 2001 for Ireland), don't wholly do the job because they are confounded by stopouts, transfers, and "return rates," and not all national statistical agencies have such variables in their portfolios. So OECD tries a different approach, and presents its account in *EAG 2008* in Table A4.1 (p. 98) for 24 member countries and three others. Despite its potential, we are staring at an unfortunately mysterious and puzzling ledger for a number of reasons:

- Of the 24 OECD accounts, 12 are cross-sectional, hence what are called synthetic age ratios. In such accounts, the people completing degrees in year X (the numerator) are not necessarily those who started out in tertiary education in year Y (the denominator), year Y being X minus the theoretical time to degree assuming full-time attendance. The other 12 accounts are "true cohorts," i.e., either a full census or representative sample ("panels") of beginning tertiary students in a given year who are followed to a censoring year. The U.S. data, from our *Graduation Rate Survey*,[9] represent a "true cohort."

[9] The *Graduation Rate Survey* is part of the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS).

TABLE 2

Background OECD Spreadsheet Data for Table A4.1, Countries Using a "True Cohort" Reporting Method for First-Cycle (Bachelor's) Degree Completion

	BEGINNING YEAR	# DOMESTIC ENTRANTS	#DOMESTIC GRADUATES	RATE	DURATION	ENROLLMENT INTENSITY
Denmark	1995	26,553	21,570	81%	6 years	FT only
Finland	1995	26,553	18,013	72%	10 years	Unclear
Italy	1998	273,385	126,369	46%	Unknown	FT only
The Netherlands	1997–98	91,641	59,968	65%	7 years	FT and PT
			65,287	71%	9 years	FT and PT
New Zealand	1998	35,245	20,239	57%	Unknown	FT and PT
Sweden	1995–96	30,061	20,991	70%	6 years	FT only
Switzerland	1996	11,683	7,971	68%	6+ years	FT and PT
	2000	8,703	6,392	73%	4+ years	FT and PT
United States	1999	1,268,887	709,785	56%	6 years	FT only

SOURCE: BACKGROUND SPREADSHEET DATA PROVIDED BY OECD.

- The date stamp for the table is 2005, but that does not mean that 2005 is the censoring date for each of the cohort histories, whether cross-sectional synthetic productions or "true cohorts," i.e., longitudinal tracking of the same people. The censoring dates are not indicated in the published table, but a little leg-work and logical deduction can produce some of them—*some* of them.

- The beginning years for the cohorts, on the other hand, are indicated, and they range from 1995 to 2003, though one doubts that some of those dates are true beginning years. How one derives a bachelor's completion rate in 2005 of 72 percent for an entering cohort in 2003 (Australia), for example—particularly when the methodology is cross-sectional—is one of those many *EAG* mysteries we will leave alone. Of the true cohort histories, seven began in 1995 or 1996, both of which are credible beginning years for survival rate calculations.

- If the beginning year is known and the censoring date is unknown, we simply cannot determine how many years are accounted for in each country's student history, hence cannot judge their comparability. France and Switzerland are the only countries on the list whose entries are explicit in the dates of cohort histories. France, for example, offers an seven-year history: 1996 beginning; 2003 ending, i.e., a seven-year history, for students in both first-cycle degree (*licence* or *licence professionelle*, comparable to the bachelor's) and what are called ISCED 5B programs (more on that below) comparable to our associate's. The completion rates for those seven years—64 percent for first degree and 78 percent for two-year ISCED 5B degrees such as the DUT and BTS in France—are very credible.[10]

- Neither Table A4.1 nor its footnotes in Annex 3 provide the sources for the data cited. Some of these, however, have been ferreted out, as will be obvious below. Equally helpful, OECD provided a set of standard form spreadsheets recording data from eight of the countries that used a "true cohort" method. These are particularly valuable because they demonstrate what an international data reporting operation such as *EAG* is up against in trying to make sense of the spaces between numbers. **TABLE 2** represents a translation of the input to OECD for *EAG 2008* Table A4.1, removing foreign students where they were included, and indicating whether the cohort survival rates included part-time, as well as full-time students.[11]

The U.S. data in this table stand out as the worst on the lot, and for reasons that OECD does not tell the reader. Our true cohort

[10] In a personal communication, OECD offered details on length of cohort history that one doesn't see even in its footnotes: four, five, and "six or more" years. While one should be grateful for this heretofore undisclosed information, neither the variations nor the range are acceptable. "six or more" is a meaningless construct: "more," after all, can be seven, nine, or 11. The term for cutting all accounts to produce the same period of judgment is "Winsorizing," and if all these assessments were Winsorized to six years, let us say, we would have comparisons worth talking about.

[11] There are a number of oddities in this table, e.g., New Zealand, the population of which is half the size of Sweden's and a lot less than Switzerland, reports an obviously inflated number of entrants and graduates. It is conceivable that they are adding multiple cohorts, but we can't tell. Switzerland reports two cohorts, one for pre-Bologna Process legacy degrees and the other influenced by the shorter expected time frame of Bologna first-cycle (bachelor's) degrees, except one cannot determine the duration of the Swiss tracking period for either one. Such oddities only add to the fog of comparison.

TABLE 3

U.S. System Bachelor's Completion Rate Compared to a Selection of True Cohort Completion Rates from Other Countries in *Education at a Glance 2008*

	BASIS OF RATE	COMPLETION RATE FOR 5A DEGREES	YEARS OF TRACKING
United States (before)	Institutional	56%	6
United States (after)	System	63%	6
France	System	64%	7
Iceland	System	66%	9
Norway	System	67%	10
Sweden	System	69%	6
The Netherlands	System	65%	7
		71%	9

SOURCES: *EDUCATION AT A GLANCE 2008; EDUCATION AT A GLANCE 2008 2008*, ANNEX 3; AND BACKGROUND SPREADSHEETS PROVIDED BY OECD

data used for this table come from the *Graduation Rate Survey*, and are the *only* data represented, whether cross sectional or true cohort, that are *institutional* rates as opposed to *system* rates. In other words, of 24 representations, ours is the only one that counts you as a graduate *only if* you earned your degree from the *same institution* in which you began. Those who thrive in bemoaning the comparatively poor performance of U.S. higher education will never mention this discrepancy—nor does OECD.

When our National Center of Education Statistics sent in a *system* graduation rate figure to OECD for inclusion in *EAG 2008*, it was buried in Annex 3, p. 46 (available only online through a separate URL). The rate was taken from the *Beginning Postsecondary Students Longitudinal Study 1995/2001*, a six-year measurement, and was confined to a bachelor's degree outcome (thus filtering out associate's degrees that somehow sneak their way into our *Graduation Rate Survey*).

The proportion of our students who started in a four-year college and earned a bachelor's degree from *any* four-year college, i.e., system graduation rate, for that period was 63 percent, as opposed to the 56 percent indicated on Table A4.1. Somehow, though, this study was described in Annex 3 as "somewhat older," even though seven of other nations' cohort histories used in Table A4.1 began in the same year. How Sweden's 1995–-96 are current and the U.S. data's 1995–96 are "old" is, euphemistically, another one of those *EAG* mysteries. Let the reader decide what is going on and how it feeds our penchant for negative propaganda.

Does a system graduation rate change our standing on this tortured list? As **TABLE 3** demonstrates, it certainly does, and an honest presentation would say that our six-year system bachelor's degree graduation rate is comparable to France's seven-year rate, and modestly below those of Sweden and the Netherlands at six and seven years. One suspects that if we took an seven-year system rate, it would be the same as that in these other countries.

But the madness of numbers doesn't stop here. As long as *EAG 2008* did not provide the sources of the Table A4.1 data, the Web sites and reports of the national ministries and statistical agencies themselves were examined to find something comparable—if not identical in form and dates—to what one reads in *EAG*. This is not a case in which the international organization uses its own estimates because national data are missing or because they require adjustments to fit into an internationally imposed template. All international organizations in the comparative indicator business acknowledge that there will be inconsistencies between the national and the comparative. The ministries do not always present the data the same way, e.g., binary systems (those with a class of universities and a class of what are called polytechnics or "universities of applied sciences") are more

TABLE 4

Table 4: OECD versus National Ministries on Cohort Completion Rates for First-Cycle Degrees

EAG 2008, TABLE A4.1	COUNTRY	START YEAR	TRACKING YEARS	RATE
	Finland	1995	10*	72%
	Sweden	1995–96	6*	69%
	The Netherlands	1997-98	7* 9*	65% 71%
MINISTRY OR NATIONAL STATISTICAL AGENCY	**Finland**			
	University sector	1998	7.5	58%
	Polytechnic sector	1998	7.5	70%
	Sweden			
	Full-time students	1995–96	7	54%
	All students	1995–96	7	44%
	The Netherlands			
	University students: full-time	1997–98	7	61%
	University students: part-time	1997–98	7	31%
	University students: all	1997–98	7	57%
	Hogescholen students: full-time	1997–98	7	66%
	Hogescholen students: part-time	1997–98	7	51%

NOTE: *TRACKING YEARS WERE NOT INDICATED IN THE EAG TABLE, BUT WERE DERIVED FROM BACK-UP SPREADSHEETS.
SOURCES: FINLAND: STATISTICS FINLAND RELEASE AT HTTP://WWW.STAT.FI/FIL/OPKU_2006_2008-05-08_TIE_001-EN, P.2; SWEDEN: STATISTICS SWEDEN 2006. *UNIVERSITET OCH HÖGSKOLOR: GENOMSTRÖMNING OCH RESULTAT I HÖGSKOLANS GRUNDUTBILDNING T.O.M. 2003/04. [HIGHER EDUCATION: THROUGHPUT AND RESULT IN UNDERGRADUATE EDUCATION UP TO 2003/04 INCLUSIVE*], P. 47. STOCKHOLM: AUTHOR; THE NETHERLANDS: CENTRAL BUREAU VOOR DE STATISTIEK 2009. *JAARBOEK ONDERWIJS IN CIJFERS 2009*. THE HAGUE: AUTHOR, PP. 206 AND 222

interested in sectoral survival rates, and **TABLE 4** presents some notable cases of divergence between OECD reports and national reports, with a stunning divergence in the case of Sweden.

Nonetheless, if we drew a simple vector chart of cohort ISCED 5A completion rates by duration of cohort history, and plugged in both ministry reports and *EAG 2008* data, we would observe a fairly tight cluster of 63 to 69 percent completions within six to nine year boundaries. The point is that if most major OECD countries are producing what we would call "college graduates" at roughly the same rate in roughly the same time span, then rate comparisons are irrelevant, and we ought to be asking other questions. Questions about traditional and alternative paths to participation in tertiary education, about inclusion of what, today, are low-participation populations, about the distribution of knowledge, and questions about potential proxies for the quality of degrees.

Contrary to convention wisdom, analogous accounting across borders is possible, though requiring true longitudinal studies. In yet another accounting, this time utilizing secondary school graduating classes (instead of beginning students in higher education) in Denmark and the United States, followed for roughly nine years, the proportion of students who attended (and, in U.S. terms, earned any credits from) bachelor's degree programs and who completed the degree was basically identical: 65.6 percent in the United States; 65.5 percent in Denmark.

The full account of this analogous accounting is presented in the longer online version of this essay, but it is worth noting here that this mode of comparison is possible because: (a) we know the students graduated from secondary school in the same country as they entered higher education (an important issue, as we will see, for countries hosting a measurable percentage of international students), (b) the students are all of roughly the same age, and (c) there is no opportunity to filter either numerator or denominator, e.g., by full-time/part-time. Within a comparison such as this, each country can evaluate the effectiveness of its systems in producing credentials in light of its own system nuances, conditions, and dynamics, and simultaneously see that there are more important questions—and indicators—to be had.

Serious Business I: The Economic Nexus

The most poignant phrasing of the basic question about comparative educational attainment—why do it?—inevitably leads to a focus on our economic assumptions, and anchors our consideration in Barro and Lee's (1993 and 2000) analyses and insights:

Why does academic policy-support research try to measure comparative educational attainment?

Because it wants to reach some confidence in the relationship between national (public and private) investment in our principal human capital institutions (schools and colleges), and both economic outcomes and social change. Reaching that confidence, however, is not an easy task, because "human capital is multifaceted and includes a complex set of human attributes, and the stock of human capital held by individuals is hard to measure with precision in a quantitative form. Educational attainment is at best a proxy for the component of the human capital stock obtained at schools" (Barro and Lee 2000, p. 3). Put another way: even if comparative higher education attainment is a somewhat diminished engine of economic understanding, we nonetheless reach.

We said before that this essay was not an academic exercise, but some "academics" are called for here so that the basic question can be revisited in the conclusion of this essay. Barro and Lee (1993) built a data base covering 129 countries over a 25-year period (1960–1985), and first demonstrated that models of the relationship of human capital to economic growth differed significantly in developed versus developing nations, with the assessment of the latter hobbled by lack of data and instability in legal institutions, fiscal policy, monetary policy, and trade. Barro and Lee's estimate model is something they call a "perpetual inventory method." They take census or survey accounts of education attainment as "benchmark stocks," and entrants at each level of schooling as "flows that are added to the stocks with an appropriate time lag" (p. 3). This is a more sophisticated version of the "virtual population ratio" presentations one sees in OECD data, and that are examined below.

The Barro and Lee approach results in first, an estimate of participation at each of three levels of schooling (none, primary, secondary, and higher) that is then qualified by completion ratios at each level (i.e., completed, did not complete). In other words, they combine participation and attainment on the same continuum. Barro and Lee also determined median years of schooling for the population 25 years and older (which means that the range extended beyond working life), but they were bothered enough by "years of schooling" as an indicator that their 2000 revision took account of estimates of those repeating grades (below the tertiary level) and changes in school duration within countries, e.g., changes in mandatory attendance years at different levels. This kind of adjustment will come into play in 2012 in Germany, when pre-collegiate time contracts from 13 to 12 years in a majority of the German states (*Länder*). One could say that, in country X, 80 percent of the age-relevant population has completed secondary schooling while in country Y, only 60 percent has completed, and country Y looks worse. But if country X requires only three years of secondary school, while country Y requires four, the results are more ambiguous.

More to the point, Barro and Lee (1993) are very explicit about the fact that content and quality are missing from educational attainment data. Years of schooling are meaningless without measures of their content. Participation and completion rates do not describe the distribution of knowledge and skills. If one wishes to make the connection between education and productivity, they stress, one needs measures of "other aspects of human capital" such as "numeracy, logical and analytical

reasoning, and various types of technical knowledge" (p. 5). Indeed, beyond years and levels of schooling is a Hanushek and Kimko (2000) analysis, with which Barro concurs: "scores on international examinations—indicators of the quality of schooling capital," particularly in science and reading (well, the former would be highly improbable without the latter) matter more (p. 23)—and that's what never could be accounted for in OECD and UNESCO population ratio data. Hanushek and Kimko call this "labor force quality," and that's what nations truly seek, hence the value in focusing on the content and competence-challenge of schooling and degree programs independent of the proportion of the population that has reached X years/level of schooling. We may talk, in the United States, about "doubling the numbers"; other nations talk about doubling the skill levels. We will return to this objective in our recommendations, though without reference to test scores.

In an unpublished 2001 paper, Barro justly argues that no simple relationship between education and economic growth can be isolated. High fertility rates, for example (such as those in the United States, Mexico, France, and Ireland among OECD countries), come "at the expense of growth in output per person," a perfectly common sense conclusion. When one puts fertility together with other variables, including education level, Barro concludes that "the ultimate effect of more schooling on the level of [national] output...is finite" (Barro 2001, p. 21). On the other hand, where increased schooling at higher levels (secondary and tertiary) carry weight is in affecting growth "by facilitating the absorption of new technologies, which are likely to be complementary with labor educated to these higher levels" (p. 22). In a counterpoint involving the same variables, Hannum and Buchmann (2003) concluded that technological advances have a greater effect on human capital investment, hence education, than vice versa. The relationships of tertiary education enrollment (however computed and represented) to Gross National Product/per capita were not very impressive across the 102 countries Hannum and Buchmann studied (p. 3). Even more broadly, however one measures educational expansion (numbers of students, public investment, etc.), there is a genuine question as to what comes first in the horse/cart relationship of economic growth and education.

Another standard assumption of the economic role of education is that when one turns to personal effects, the more education the higher one's income, no matter what national economy in which one works and lives. But we have a large black box called "occupation" that stands between education and income, and, as Ganzeboom and Treiman (1996) pointed out, one finds distinct differences of employment status (hence, income) within the same occupation, and large between-country differences when one considers such common labels such as "self-employed" or "supervisor." Ganzeboom and Treiman's contribution to the way we think about our standard assumption was thus to open the black box to ask what "attributes of occupations...*convert* a person's education into income" (p. 212). To answer this challenging inquiry, their analysis of complex data sought "to maximize the *indirect effect* of education on income through occupation and to minimize the *direct effect* of education on income, net of occupation (with both effects net of age)" (p. 212). Their common-sense finding, that "occupations are somewhat more homogeneous with respect to education than with respect to income," is more than enlightening in considering attainment indicators, since attainment, accompanied by the content of education, limits the range of occupations into which individuals can move, and these limitations aggregate in national economies. This conclusion opens up the importance of examining not merely degree production, by field, but post-degree occupation, by field of degree—something we rarely see in international comparative data (though individual national ministries; e.g., from the Netherlands, United Kingdom, and the United States) provide general employment status data by field of degree

The reader should sense that the economic nexus for judging the educational topography of nations cannot be avoided in our judgments. Neither can the demographics.

Serious Business II: The Demographic Nexus

The most under-rated and often ignored factors that should influence our presentation and interpretation of comparative international data are demographics. And the most important demographic data for higher education lie in the age distribution of national populations, current and projected. To grasp the basic facts of the case, let us walk through **TABLE 5** for 29 OECD countries plus Russia.

The 30 countries are listed in order of gross population. All data come from the World Bank's 2008 World Development Indicators CD, and a comparison row for the United States drawn from our census data (which, in its projections of the gross U.S. population to 2025, disagrees with the World Bank by a mere 9 million people—don't ask!). What should we see?

- The United States is the largest ship in the OECD harbor. To compare what does, can, and could happen in this country with Denmark, Finland, Ireland, or New Zealand requires a considerable stretch of judgment though we persist in judging.

- Not only are we the largest ship, but we are on track to add more people over the next 15 years than any other OECD country—nearly three times what Mexico will add, over three times what Turkey will add, and 320 times what Finland will add. No matter what we do in education, as Barro and Lee would observe, our GDP per capita is headed south.

- Furthermore, the projected percentage increase in our population is impressive despite our size. Our 0.9 percent annual growth rate is tied with Australia for the fourth highest in this OECD universe, and is principally a product of above-replacement fertility (2.0 or higher) and net migration. Canada may have a higher net migration rate, but also evidences a much lower fertility rate. Mexico ties with us in fertility, but obviously evidences a negative net migration rate. So just in North America, we are looking at three different growth stories.

The spreadsheet isolates the population 25–34 years old and its projection to 2025 on the grounds that, as children of time in every country, this is the period during which the summative judgment of our educational attainment is normally pronounced, and, in contemporary discourse, nations are judged on how many and what proportion have been brought through the tertiary level. Net migration by age bracket is too variable to factor into existing populations (Le Bras 2008), but one can assume that most of these people are already in the pipeline to 2025. While we can observe that the United States ranks first in numbers and fifth in percentage growth in this age group, the more interesting story for our assessment of international performance lies elsewhere. Why?

- In the 25–34 age group, 10 of the 30 countries will experience shrinkage of 20 percent or more over the next 15 years. Russia, Spain, Romania, Poland, and the Czech Republic will see declines of over 30 percent! These are huge contractions of the denominator in census population ratio methodologies. They lead to a simple fourth grade math question: what happens to a fraction—hence percentage—when the denominator declines dramatically and the numerator is not threatened to a similar extent, particularly in light of the lagging impact of decline (Vincent-Lancrin 2008)? If these countries do absolutely nothing, the percentage of the target age group participating in tertiary level education will rise, and the percentage of the age group who have earned degrees will also rise.

TABLE 5

Population Growth Rates and Projected Changes in OECD Countries and Russia

COUNTRY	POP IN 2010 (MILLIONS)	POP IN 2025 (MILLIONS)	DIFF	% DIFF	2010 POP 25–34 (MILLIONS)	2025 POP 25–34 (MILLIONS)	DIFF	% DIFF	GROWTH RATE 2010 (%)	FERTILITY RATE 2010	NET MIGRATION 2010 OR NORM
U.S. CENSUS	310.2	357.5	47.3	15.2%	41.8	46.1	4.3	10.3%			
United States	310.21	348.34	38.13	12.3%	42.45	46.59	4.14	9.8%	0.9	2.1	4.1
Russia	139.08	127.13	-11.95	-8.6%	21.99	14.39	-8.6	-37.4%	-0.6	1.3	0.4
Japan	126.59	118.34	-8.25	-6.5%	16.21	12.27	-3.94	-24.3%	-0.2	1.3	0.4
Mexico	108.52	122.21	13.69	12.6%	17.14	19.52	2.38	13.9%	1.0	2.1	-3.4
Germany	81.83	79.17	-2.66	-3.3%	9.72	8.96	-0.76	-7.8%	-0.2	1.4	1.8
Turkey	76.52	87.95	11.43	14.9%	13.13	13.63	0.5	3.8%	1.2	2.2	-0.1
France	62.06	65.01	2.95	4.8%	7.86	7.82	-0.04	-0.5%	0.4	1.9	1.6
UK	61.29	64.54	3.25	5.3%	7.77	7.99	0.22	2.8%	0.4	1.8	2.1
Italy	58.67	57.31	-1.36	-2.3%	7.14	6.16	-0.98	-13.7%	0.0	1.4	2.6
South Korea	48.87	48.75	-0.12	-0.2%	7.56	6.47	-10.9	-14.4%	0.2	1.1	-0.1
Spain	44.89	46.38	1.49	3.3%	6.96	4.69	-2.27	-32.6%	0.7	1.4	2.8
Poland	37.75	36.08	-1.67	-4.4%	6.32	4.29	-2.03	-32.1%	-0.2	1.2	-0.7
Canada	33.67	37.76	4.09	12.1%	4.69	4.97	0.28	6.0%	0.8	1.5	5.8
Australia	21.38	24.41	3.03	14.2%	2.94	3.21	0.27	9.2%	0.9	1.8	4.8
Romania	21.09	19.42	-1.67	-7.9%	3.36	2.17	-1.19	-35.4%	-0.5	1.3	-1.9
The Netherlands	16.45	16.79	0.34	2.1%	1.93	2.07	0.14	7.3%	0.2	1.7	1.8
Greece	11.17	11.15	-0.02	-0.2%	1.65	1.22	-0.43	-26.1%	0.1	1.3	2.7
Portugal	10.71	10.69	-0.02	-0.2%	1.62	1.18	-0.44	-27.2%	0.3	1.4	2.3
Belgium	10.58	10.85	0.27	2.6%	1.32	1.31	-0.01	-0.8%	0.2	1.7	1.9
Czech Rep.	10.21	9.99	-0.22	-2.2%	1.59	1.11	-0.48	-30.2%	0.0	1.3	1.4
Hungary	9.91	9.41	-0.5	-5.0%	1.52	1.15	-0.37	-24.3%	-0.4	1.3	1.0
Sweden	9.21	9.74	0.53	5.8%	1.12	1.21	0.09	8.0%	0.4	1.8	2.7
Austria	8.35	8.46	0.11	1.3%	1.07	1.01	-0.06	-5.6%	0.3	1.4	2.4
Switzerland	7.55	7.79	0.24	3.2%	0.93	0.97	0.04	4.3%	0.3	1.4	2.7
Denmark	5.46	5.53	0.07	1.3%	0.63	0.72	0.09	14.3%	0.2	1.8	1.1
Slovak Rep.	5.38	5.26	-0.12	-2.2%	0.92	0.65	-0.27	-29.3%	0.0	1.2	0.4
Finland	5.31	5.43	0.12	2.3%	0.68	0.65	-0.03	-4.4%	0.2	1.8	1.1
Norway	4.76	5.19	0.43	9.0%	0.58	0.69	0.11	19.0%	0.6	1.8	3.4
Ireland	4.52	5.26	0.74	16.4%	0.76	0.67	-0.09	-11.8%	1.2	1.9	4.3
New Zealand	4.31	4.79	0.48	11.1%	0.56	0.65	0.09	16.1%	0.8	2.0	2.4
U.S. Rank	1	1	1	5	1	1	1	5	4(T)	2(T)	4

NOTE: WHERE NET MIGRATION DATA FROM THE WORLD BANK WERE MISSING, THEY WERE TAKEN FROM THE MIGRATION POLICY INSTITUTE'S DATA HUB.
SOURCE: *WORLD BANK: 2008 WORLD DEVELOPMENT INDICATORS*

- Conversely, countries with notably increasing denominators in this age group—particularly the United States—will witness declines in both participation and attainment rates unless they can increase participation and attainment by an amount exceeding the underlying population growth. In the case of the United States, that means we would have to increase our core outcome measures by at least 9.8 percent by 2025 just to remain where we are, irrespective of comparative rankings. There is simple math here, not madness.

The reader should begin to sense that population change is not necessarily constant from one age bracket to another, and a careful reading of tables will evidence considerable volatility in some cases. Demographic projections are always in motion. Famines, tsunamis, and wars that result in involuntary migration are not regular events. Fertility rates, mortality, ageing models, etc. are perpetually in flux (Preston, Heuveline, and Guillot 2000), so that a number one reads today can change in a few months. To anticipate such variations, the U.S. Census Bureau always offers three levels of projection—high, middle, and low—each based on a different model of the core variables.

To assert that demography is important for planning in higher education everywhere is an understatement. While the table hones in on the 25–34 age group, planners with details of the provision of schooling on their minds instinctively ask about younger age groups. For example, Eurydice and Eurostat (2009) offer critical data concerning projected changes for the 10–14 age group (the age of beginning momentum toward tertiary level education) in the European Union to 2020. The 27 EU countries will see a 14.9 percent decline in the population of this group from its 2000 level, with only Ireland and Spain showing significant increases (11.4 percent and 9.5 percent respectively), bare increases in the Netherlands and Denmark, and everyone else in free fall. European fertility rates may have ticked up in 2009 (Marcu 2009), but that has yet to save the day for future assumptions.

In reporting and comparing participation and attainment ratios, the international organizations such as OECD and UNESCO most commonly use a labor force age bracket of 25–64. To illustrate the distortions that such an approach generates, consider two cases: Spain, where no less than three major structural overhauls of the country's educational system took place during the lives of the current 25-64 year-old population, and with more changes to come in Spanish higher education's transition to Bologna Process degree cycles (Ortiz 2008); and South Korea, where the Korean War basically declared "school is out!" from 1950–1953, "school is imperfectly in session" until 1960, technical junior colleges will open in 1964, and higher education is a limited phenomenon until the 1980s. Hence, the older age bracket within the 25–64 year old range for Korea naturally shows a much lower tertiary participation and completion rate. The neglect of basic history in analyses of time series attainment such as those of Spain and South Korea (e.g., in Hauptman and Kim 2009) is unfortunate, and this judgment can be extended to time series data from any country that, at some time in the past half-century, emerged from dictatorship or experienced war on its own soil—eight of the current 30 OECD member states.

Let's get these data straight, too:

If 35 percent of our current 40 million 25–34 year-olds hold a bachelor's degree (15 million) and the population of that age group is slated to rise to 46.6 million by 2025, then we need 16.3 million bachelor's degrees—1.3 million more than at present—in that age group in 2025 just to stay at 35 percent. This should not be a difficult task. It translates to an average of 87,000 more bachelor's degrees a year over 15 years, or 5.4 percent more than our current annual production of 1.6 million. Other countries with declining population bases will have a much easier time raising the proportion of their populations with degrees comparable to the bachelor's.

If our primary concern is keeping up with the declining Joneses of this world, then we will have to raise our census proportion target to at least 40 percent, and for every 5 percent increase in the target, produce another 87,000 bachelor's degrees annually. If our primary concerns are with the quality of the additional degrees to be awarded and the inclusiveness of the population to whom they are awarded, then it may be wiser not to battle the declining Joneses for the sake of a comparative population ranking, rather to fulfill our own goals for equity and accountability.

National traditions also interact with age to produce different bulges in participation and completion rates. The question of when students enter higher education, illustrated for 20 OECD countries in **TABLE 6**, requires context for judging what appear to be considerable variations. Across Scandinavian countries, one notices higher percentages of older beginning students. These are largely the result of both screening by entrance examinations and a habit of taking some "gap years" after secondary school leaving and prior to tertiary entrance.

For Finland, for example, only 40 percent of secondary school graduates qualify for immediate entrance by examination. As Kilipi (2008) observes, "most [Finnish] students have to take one or several gap years before they can continue in tertiary education" (p. 274). In Germany and Austria, all 18 year-old males are required to perform either six months of military service or 12 months of civilian service, and that obviously will push up the proportion of students starting out at age 20 or above (though, as previously noted, the German case will change in 2012,

TABLE 6

Beginning First Academic Degree Students in 20 Selected OECD Countries, by Age Bracket, 2006

COUNTRY	TOTAL	15–19	20–24	25–29	30+
Austria	41,234	33.5%	52.6%	8.5%	5.5%
Australia	234,175	53.7%	27.4%	7.6%	13.0%
Czech Republic	69,251	35.4%	46.3%	6.8%	11.5%
Denmark	36,354	6.8%	63.2%	14.0%	15.9%
Finland	49,874	25.3%	63.26%	10.7%	16.3%
France	308,397	82.1%	NA	NA	NA
Germany	341,639	21.0%	64.6%	10.1%	4.4%
Greece	65,053	63.5%	13.4%	13.1%	10.0%
Hungary	90,285	38.0%	33.5%	13.2%	15.2%
Ireland	24,746	75.8%	15.7%	4.4%	4.0%
Italy	334,650	61.1%	21.0%	14.8%	0.0%
Japan	617,850	91.2%	3.1%	Low N	Low N
The Netherlands	115,540	55.5%	31.6%	4.7%	8.2%
Poland	491,411	42.3%	46.2%	4.9%	6.6%
Portugal	69,983	49.4%	25.1%	10.0%	15.4%
Spain	223,566	63.3%	23.1%	6.8%	6.8%
Sweden	84,086	17.7%	50.3%	12.6%	19.4%
Switzerland	34,536	19.6%	53.6%	11.3%	15.5%
United Kingdom	462,921	58.2%	21.1%	6.5%	14.2%
United States	2,657,338	58.3%	21.1%	6.6%	13.0%

NOTES: ROWS MAY NOT ADD TO 100.0 PERCENT DUE TO ROUNDING AND MINOR "UNKNOWN" PERCENTAGES BOTH THE AUSTRIAN AND UK DATA INCLUDE 20 YEAR-OLDS WITH THE 15–19 BRACKET. VOLATILITY COULD BE ILLUSTRATED IN THE CASE OF SPAIN, WHERE, WITHIN ONE YEAR, FIRST-TIME STUDENTS INCREASED BY 32 PERCENT, WITH THE PROPORTION OVER 25 RISING FROM 13.6 PERCENT TO 24.5 PERCENT OF THE TOTAL. DATA FOR FRANCE UNAVAILABLE FROM EUROSTAT, SO TAKEN FROM MESR SOURCES FOR 2007. AGE DISTRIBUTION AVAILABLE ONLY FOR UNIVERSITY SECTOR. AUSTRALIAN TOTAL ENROLLMENT FIGURE FROM THE MINISTRY. NUMBER OF STUDENTS AGE 25 AND OLDER IN JAPAN WAS TOO LOW FOR ANALYSIS. SOURCE: EUROSTAT. HTTP://EPP.EUROSTAT.ED.EUROPA.EU/PROTAL/PAGE/PORTAL/EDUCATION/DATA/DATABASE

when the number of years of pre-tertiary schooling declines). Ireland and Portugal both have special provision for support of students entering higher education at age 23 or older, and while these provisions don't seem to affect the distribution of entering students' age for Ireland, there is an obvious bump up for Portugal (which shows 26,151 students enrolled under these provisions in 2007–08). The French data for entering students in 2007–08 (*nouveaux bacheliers dans l'enseignement supérieur*) are referenced to those who passed one of the *baccalaureat* examinations in 2007, a proxy for truly first time students that misses older beginning students, but the age distribution is provided only for those entering the university sector (and the French age brackets do not match those used by Eurostat).

For all planning, higher education authorities require actual numbers, not population growth adjusted percentages, and actual numbers in terms of the origins, geography, and social characteristics the students of the future are likely to be. Every national authority needs to establish planning parameters in terms of likely foreign students and their countries of origin, domestic students by region and regional population density (e.g., isolated rural, a major concern of all advanced democracies bent on increasing access), and age bracket (particularly in light of lifelong learning agendas). While some national data series offer these numbers, we have yet to construct a meaningful comparative scaffolding for the realities they represent.

Serious Business III: ISCED, a Misconstructed Classification as Scaffolding

Some would demur that we have a scaffolding for our more general tasks of comparative presentation of national education systems in a classification taxonomy, ISCED. Very well, but think about the nature of classification. As Ganzeboom and Treiman (1996) point out, classification is (at least) a two-stage operation. The first stage is empirical: you gather all the phenomena under consideration, drill down to cases that illustrate what the labels for those phenomena represent, and begin to move the pieces around on the basis of "what goes with what." It's more of a challenge than factor analysis. Then, as the authors put it for occupations (but it applies to degrees and academic programs as well), the empirical objects are "recoded into measures of a more manageable size and...relevance" (p. 202). ISCED, however, was not derived so empirically, though perhaps it should be (see Schneider [ed.] 2008).

For all its faults, there is no way around ISCED, no way U.S. higher education officials can avoid learning about it, and no question that its faults are in process of being corrected principally as a result of its misconstruction and misapplication in tertiary level education. The correction is being driven even more by the Bologna Process in Europe, under which 46 countries are converting all previous tertiary education credentials to a three-cycle structure that we, in the United States, know well: bachelor's-master's-doctorate. Bologna countries that offer "short-cycle" degree programs (comparable to our associate's) may think of them as part of the bachelor's, but report them separately.

ISCED is designed to account for and to facilitate reporting of those who are in the educational system. It is not designed for a description of the educational attainment of entire populations, in school and out-of-school, so when considering participation data and its social dimension (under-served populations), ISCED is not much help. The current version of ISCED classifies all education in six levels, with Level 6 reserved for the Doctorate, and Level 5 for *all* other higher education programs, hence easily winning the confusion prize. The principal problems lie in placing bachelor's and master's degrees in the same category (5A), which then gets broken up by an auxiliary crite-

rion of length of program, and, in some countries' interpretations, by program orientation (academic or occupational, phrased in ISCED guidelines as "theoretical" or "professional"). The second complexifying criteria at ISCED Level 5 derives from an overall principle of orientation in the ISCED system, namely, "destinations" of students completing a given level program. One side of the destination criterion means "access," i.e., qualification to proceed to another ISCED level. Another side seems to mean residual behavior, i.e., if the program does not qualify you to move on, then you go to the labor market. It is assumed by ISCED that all 5A degrees provide access to Level 6, the research/doctoral. That clearly is not the case.

Another problem at the level of ISCED 5A is that of what we would call first-professional degrees (e.g., law, medicine, dentistry, etc.) and what might more broadly be conceived as degrees in the regulated professions in other countries. While medicine, for example, is universally recognized as a long degree in a regulated profession, it is treated as a first degree in most other countries, whereas we treat it as a second degree. Law is also treated as a first degree in other countries, though it is a shorter program than medicine. For us, it is a second degree. In neither case do we consider the degree on the same level with an ordinary U.S. master's degree—yet that is the way the ISCED system classifies them.

The sorting at ISCED 5 begins at a level labeled 5B. As noted above, we can think of 5B as a home for our associate's degree programs. Level 5B means short-cycle (less than three-year) credentials, some of which qualify one to move on to destination 5A and some that do not (hence leave a residual to the labor market). But in order to make such a distinction, one would have to classify each discipline's programs in a country, and nobody would pretend to take on that task. Yet there is no question that some 5B credentials do not provide access to 5A. In the United States, an Associate of Applied Sciences (AAS) degree in HVAC (Heating, Ventilating, and Air Conditioning) is definitely not a transfer degree, and similar examples can be found in Japan, Canada, and among the French two-year BTS (*Brevet de technicien supérieur*) programs.

The *UOE (UNESCO-OECD-Eurostat) Manual* (2005), with instructions for data reporting, offers a set of reference points and decision rules so complex that countries can wind up reporting the same phenomena (entrants, completions) in different ISCED categories. First, a "level" of education is broadly defined with the following reference:

"the gradations of learning experiences and the competencies built into the design of an educational programme. Broadly speaking, the level is related to the degree of complexity of the content...this does not, however, imply that levels of education

FIGURE 1

Pre-Bologna Degree Program Classifications in *ISCED 97*

MEDIUM TERM	MEDIUM AND/OR LONG TERM	LONG OR VERY LONG
Polytechnics (Finland)	CPGE (France)	Universitäten (Germany)
Licence (France)	Diplôm d'ingenieur commercial (France)	Master's (Australia)
Hogescholen programs (Netherlands)	Corsi de Laurea (Italy)	Shushi (Japan)
Candidatus magisterii (Norway)	Daigaku Gakubu (Japan)	Master's (Mexico)
Diplomatura (Spain)	Bachelor's (Mexico)	Nachdiplom (Switzerland)
Bachelor's (UK)	University programmes (Czech)	JD, MD, etc. (US)
Bachelor's (US)	Kandidatuddannelser (Denmark)	

SOURCE: UNESCO INSTITUTE FOR THE STATISTICS, *ISCED 97*

constitute a ladder...it also does not preclude the possibility that some participants in educational programmes at a given level...may have previously successfully completed programs at a higher level (p. 83)."

Well, obviously it's tough to generate unambiguous determinations of levels defined in terms of "the degree of complexity of the content" across diverse systems, so, in addition to typical program duration, the UOE Manual offers other proxy measures, including typical starting age, typical entrance requirements, future education eligibility for those who complete a program at a given level, and curricular orientation (occupationally specific or general). ISCED also requires that 5A programs be a minimum of three years, provide entry to high skills professions or research activities, and staff the instruction with faculty holding advanced degrees. But then: "It is only by combining national degree structure with other tertiary dimensions...that enough information is available to group degrees and qualifications of similar education content" (UOE Manual 2005, p. 110). Those concerned with the content of degrees, particularly under the Qualifications Frameworks required of all 46 Bologna participating countries, must wonder what those "other tertiary dimensions" might be.

Are we all following this now? If so, we recognize that, even after all these qualifications, bachelor's and master's degrees are still in the same classification bin. ISCED's "solution" to this problem is to allow labeling of 5A degrees as first degree and second degree, and to add the criterion of general duration of program (medium or long term) to the classification. In the days before the Bologna Process engendered a convergence of European practices, the upshot is illustrated by **FIGURE 1**, an extract from UNESCO's *ISCED 97* (pp. 113–116).

This is a strange collection, even for 1999, when the Bologna declaration was signed. The list includes distinct degree programs, classes of institutions (implying that all degree programs of the Finnish Polytechnics, Dutch *hogescholen* and German universities are to be treated the same way[12]), and partial programs (the CPGE in France is a two-year, post high school preparatory program for high-performing students on the way to the elite *Grandes écoles*, and classified by the French as a lower-level general tertiary way-station). Not all UK bachelor's degrees are three-year (engineering and architecture, for example, are at least four-year degrees). Not all German *Diplom* (the legacy university degree) are long-term (five-to-six-year) undertakings.

One can instantly see the possibility for confusion when all of these degree programs are under the same classification umbrella. Where one has degree programs that require a prior

[12] Among the national systems in this study, Austria, Finland, Germany, the Netherlands, and Portugal are all *officially* "binary," that is, there are two types of institutions—universities and "universities of applied sciences" sometimes called polytechnics—in each.

ISCED 5A degree as a criterion for entrance, as do the U.S. first professional programs in law, medicine, dentistry, and veterinary medicine, they are not only second degrees, but degrees of a second magnitude. If the European medical degrees are classified as de facto second degrees (even though they are the first degree earned), well, so should U.S. medical degrees. And how should Poland, which is now offering a post-bachelor's U.S. model medical program as one of its options for medical degrees, classify the credential awarded?

There is clearly internal pressure in the ISCED system to expand to seven levels, and make a new Level 6 home to master's and first professional degrees (we will later argue for eight levels). The new ISCED mapping,[13] program and qualifications-based, is expected to designate 5B as a shorter program, but will not require length of program as a determinant. Ambiguity will obviously remain.

[13] OECD's INES group has indicated that the target release for the revised ISCED will be 2011.

Who Gets Counted, as What, and Why?

The *UOE Manual* (2005) is the recognized guideline for national statistical agencies in reporting higher education data to the core international organizations. We start out right away with another challenge. Eurostat's instructions and forms for the UOE data collection begin with a series of inquiries to responding country authorities as to whether there have been any changes of a significant order compared with the previous year in:

- The education system of the country itself, for example, the disappearance of short-cycle degrees in Austria as a by-product of Bologna Process reforms;
- Coverage of the data collection, for example, if programs—such those of private providers—are now included or excluded;
- Methodology, for example, if a template from a national longitudinal study (based on a sample) is projected on full census data;

and, if so, to indicate which of the core UOE surveys were affected, and which ISCED levels were affected (with estimates of percentages or absolute numbers). So, does Eurostat keep a cumulative record of the nature and frequency of reported changes? Eurostat personnel say no. Without a record of reporting changes, and even in light of Eurostat instructions on how to deal with shifts from legacy to Bologna degrees (Mejer 2006; Eurostat 2008), it is difficult to explain volatility in reported data, e.g., from the Czech Republic for first-cycle (bachelor's) degree awards between 2000–06, including a 37 percent increase in degrees between 2004–06, though OECD makes special mention of this Czech phenomenon in *EAG 2008* (p. 79).

A second rule of note applies to beginning students and is embodied in instructions for "Annual Intake by Level of Education and Programme Destination." The responding national statistical agency is instructed to provide the following data:

"Total students enrolled, of which:
- New entrants
- Re-entrants
- Continuing students

For new tertiary entrants, of which:
- Previous education at the other tertiary level [5A, 5B]
- Without previous education at the tertiary level"

Is the distinction between "new entrants" and "re-entrants" always observed? No, as OECD acknowledges for Ireland and Switzerland in those little-read footnotes (*EAG 2008*, Annex 3, pp. 19–20). And how many countries will count, as part of their completion rate, students who move from ISCED 5B to ISCED 5A programs (common in the case of the French DUT degree and the England's Foundation Degree—cases where the national statistical agencies report continuation rates)? Does Eurostat know? No. This is a question analogous to community college/four-year transfer rates in the United States, a not exactly

unimportant measure of system efficiency. But in the European Union, as an Austrian Ministry official remarked, within country transfer (permanent or temporary) "doesn't draw the same interest in official data as does international mobility."

Lastly, there is the matter of graduates. Basically, in UOE reporting, "graduates" are whatever a country says they are, students who meet criteria for "successfully completing an educational programme during the reference calendar year" (p. 18). Does "successfully complete" mean the award of a credential? In so many words, maybe: "a successful outcome should result in certification which is recognised within the educational system and the labour market" (p. 18). Does that allow for traditional intermediate credentials? Is the Swedish Diploma counted for "graduation," and if so, as what? Is the Canadian "college post-diploma" counted, and, if so, as what? In these cases, it's up to Sweden and Canada. Statistics Sweden puts its bottom line for undergraduate awards in 2005–06 very clearly:

"59,100 degrees were taken by 53,000 individuals, which means that many students took more than one degree...the number of students graduated for the first time 2005–06 was 43,600, indicating that many students had a previous degree."[14]

One rarely finds national statistical agencies as open about this. The statement itself is a touchstone for the considerable variation in potential inputs to OECD, Eurostat, and UNESCO formulas and reportings.

[14] http://www.scb.se/templates/Publikation_198399.asp; received 12/7/2007.

The Swedish data indicate that there is an obvious difference between "graduates" and "graduations" (and, as we will see, "completions"), and the UOE Manual makes the reporting requirements very clear: no double-counting allowed for "graduates," but when students earn credentials in more than one program, each case is a "graduation," and the student can be counted two or three times. This issue turns up only when one examines comparative international data on degrees by field, an inquiry that lies beyond the boundaries set for this essay.

Some of the skepticism about comparative international data is justified by ambiguities and inconsistencies surrounding the question of just who is being counted. These turn up in both categories of indicators—participation and completion—put fourth by the international organizations that post the data. Here we begin to encounter "synthetic" or "virtual" population ratio methodologies and presentations. That is, instead of direct numbers of real people and percentages from individual national ministries and statistical agencies, the international organization—be it OECD, UNESCO, or Eurostat—offers a proxy formula to represent what happens in tertiary education relative to a specific age bracket that is presumably common to all countries, but isn't.

We illustrate with an indicator that U.S. readers rarely see. It is a UNESCO product: the Gross Enrollment Ratio (UNESCO also produces a Gross Completion Ratio that is more problematic and is best set aside). The Gross Enrollment Ratio (GER) applies to all levels of ISCED 5 and 6, i.e., everything from associate's to doctorates. It expresses the percentage of a country's population in a theoretical age-group for tertiary participation—generally,

TABLE 7

UNESCO 2007 Gross Enrollment Ratios (GER) and Tertiary ISCED Distribution for Selected Countries

	GER	PERCENT ISCED 5B	PERCENT ISCED 5A	PERCENT ISCED 6
Austria	75	16	81	4
Australia	51	51	84	7
Belgium	62	62	47	2
Canada	NA	NA	NA	NA
Czech Republic	55	9	85	8
Denmark	80	13	85	2
Finland	94	0	93	7
France	56	25	72	3
Germany	NA	NA	NA	NA
Greece	91	35	61	4
Ireland	61	29	68	3
Italy	68	29	98	2
Japan	58	23	75	2
Korea (South)	95	36	63	1
Mexico	27	3	96	1
The Netherlands	60	0	99	1
New Zealand	80	27	71	2
Norway	76	1	97	3
Poland	67	1	97	1
Portugal	56	1	94	5
Romania	58	1	96	3
Russia	75	20	78	2
Spain	69	13	83	4
Sweden	75	5	90	5
Switzerland	47	18	74	8
Ukraine	76	17	82	1
United Kingdom	59	22	74	4
United States	82	21	77	2

SOURCE: HTTP://STATIS.UIS.UNESCO.ORG/UNESCO/TABLEVIEWER/TABLEVIEW.ASPX

the first five years following the normative secondary school graduation age—that is actually enrolled in tertiary programs.

One assumes that this definition excludes students who are—let us put it simply—visitors, i.e., they are not counted in a country's base population or in its student population. But it is not clear that this is the case.

One also assumes that the numerator includes students enrolled in open universities in those countries that have them (e.g., the United Kingdom, Japan, Korea, Finland, the Netherlands, and Spain), but it is not clear that open university students are always included in national data, so there is a genuine question of whether they are acknowledged in a GER.

In order to determine the GER, one needs a full and accurate census enrollment number, including all types of institutions, public and private, and all enrollment intensities, part-time and full-time. It is fair to say that not all countries can fulfill these requirements and not all countries fill them in the same way.

For one key component of an enrollment ratio variable, part-time status, we could find no data in ministry reports or on statistical agency Web sites for Denmark, Finland, France, Germany, Italy, Portugal, or Spain. Do such students exist? We know from the *Eurostudent III* surveys (Orr, Schnitzer, and Frackmann 2008) that they are alive and well; we know from both reports from other countries (e.g., Ireland, the Netherlands, Sweden, and the United Kingdom) and from Eurostat's perceptive account of four kinds of part-time students (Eurostat 2009, pp. 61–64), that they are a significant presence; and we know that if U.S. higher education did not embrace part-timers, our access rates would be miserable. But how (and whether) part-time students enter UNESCO's GER remains an open question. Comparability also depends on the definition of the academic/calendar year. UNESCO says that calculations since 1998 have been on a calendar year basis, but most countries' education statistical systems are constructed with academic-year brackets.

The problems with the GER are evident in its very definition. Counting total tertiary enrollments, from short-cycle to doctoral, i.e., ISCED 5B through ISCED 6, and setting that against an age group that, in most countries, is confined to the 18–23 or 19–24 age brackets, produces artificially high ratios since older students are in the numerator, but not the denominator. The denominator in these cases is a "synthetic"; the numerator is not.

UNESCO tries to dilute the misrepresentation by offering a distribution of enrollments by ISCED level, but that really doesn't answer the question of who is counted, particularly when students attend more than one type of institution and when the multi-institutional combination includes both ISCED 5B and 5A programs (in the United States, that combination would account for a *third* of traditional age students). In its suggestions for clarity, this essay will argue for a different way of calculating and presenting enrollment data, but the reader should see what the current data look like, hence **TABLE 7**.[15]

So how does the United States rate an 82 GER (fourth highest in this presentation)? A lot of older students in the numerator. The same observation holds for countries where the median starting age for tertiary education is in the 23–25 range (Scandinavians, generally). For all countries on the list in which students change institutions during a single year, the student is counted twice in enrollment data (and for the United States, horizontal transfer at the four-year college level is not insignificant). Then you have the obvious phenomena of variable definitions of what is 5B versus 5A. Where we know there are established short-cycle degree programs (United States, France, United Kingdom, Japan, Korea, and Ireland), we are generally not surprised at what we see for ISCED 5B. But the Netherlands has 55 experimental associate's degree programs running, and UNESCO says they have 0 percent ISCED 5B enrollments (to be sure, enrollments in these new programs in 2007 were low, but that deserves at least a footnote). Portugal is a similar case (about 5,000 candidates for the short-cycle *Bacharelato*), though diplomas and not degrees are the dominant awards in about 250 short-cycle programs offered by both universities and polytechnics, while Belgium historically has classified more than half its tertiary programs as 5B. In short, the GER does not accurately measure what it purports to measure, a by-product of the fog surrounding the identity of the counted.

[16] For two major countries in Table 6, Canada and Germany, the distribution is surprisingly unavailable. And if it is unavailable by UNESCO accounts then it must also be unavailable to OECD. Yet in OECD's *Education at a Glance 2008* one can find at least a modified version of a GER for these countries.

Given the increased international mobility of tertiary students, let alone internal migration rates in advanced post-industrial economies, one of the most significant questions about who is counted center around those who are not native to the country and system at issue, and these now deserve our special attention.

Non-native Students: Who Gets Credit?

While the overall volume of students enrolled outside their country of origin is low worldwide at roughly 2 percent of all students, it is concentrated in a handful of countries, conditioned by language and ex-colonial relationships, and (with notable exceptions of Australia and Austria) higher at the master's, first professional (in the United States), and doctoral levels than the bachelor's (European Commission 2007, p. 77). Austria is a case where specific programmatic circumstances explain the volume: *Ausländer* comprise 18.5 percent of all enrollments, and nearly a third of beginning enrollments, principally as a by-product of (a) German-speaking students coming into medical programs from Germany and Switzerland; and (b) the draw of universities dedicated to the fine, applied, and performing arts.

How internationally mobile students are defined, and the differences they make in enrollments, major programs, and degree completions can be notable and meaningful in a particular country's data presentation. OECD has become increasingly sensitive to this issue, as a reader of *EAG 2008* cannot help but observing.[16] The *UOE Manual* offers two basic choices on this matter for data collection systems: country of "permanent or usual residence" and country of prior education (p. 15). Country of citizenship, it is advised, "would only be used in the last resort, and reported separately..." (p. 15), and OECD warns that definitions based solely on citizenship result in overestimates. Nonetheless, Australia, Austria, the Czech Republic, Japan, Norway, Slovak Republic, Spain, Sweden, and the United Kingdom define international students by residence, and foreign students by citizenship. It's not clear which takes preference or whether a non-citizen resident is counted twice. One would add that nationality cannot be used as a sorting construct for international/foreign when there are large and long-resident immigrant groups, e.g., Francophone North and West Africans in France, Turks in Germany, Caribbeans in the United Kingdom, and Indonesians in the Netherlands.[17]

The European Commission's data on international student mobility are particularly poignant when the question of how students from outside the country of study are credited when they earn degrees is raised. The country of origin may not know that the student has earned a degree for some years (if at all). In the meantime, the country in which the degree is awarded gets the credit. Under this accounting, the host country's population participation ratio "suffers" (because it cannot include foreign students in a numerator representing domestic enrollments), but its cohort survival rate gains. Too, countries that export a significant percentage of students "lose," while those that import "win"—at least when degree completion is the topic.

OECD simultaneously offers both the most constructive way out of these dilemmas and enough ambiguity to guarantee inconsistent application. An illustrative case: the group of students who are immigrants and permanent residents of a country, no matter what their current citizenship status. OECD basically says: you can count these students as if they were the same as domestic students or you can create a separate category for them if they received "their prior education in another country" (*EAG 2008*, Annex 3, Indicator C3, p. 13). Contributing countries can choose which fork in the road to take. For purposes of analyzing access, participation, and completion, "prior education in another country" would be a rather critical variable for societies with high-net migration rates. In the matter of counting beginning students, administrative records are not going to show how much tertiary education non-natives had in their native countries prior to enrollment in the host nation. Austrian reporting makes this distinction very clear: at the bachelor's degree level, a third of Austria's "beginning" foreign students in 2005 were not true first timers. It is possible that other countries also make this distinction, but one would have to hunt through reams of microdata to make that determination.

In judging the performance of a national system—not against others but against itself (which is what really matters)—one needs to separate out those for whose preparation the system is not responsible from those for which it is responsible. And that means a decision rule in terms of how much of the "prior education" would be considered in sorting, a criterion OECD leaves open. Finland, the Netherlands, Switzerland, and Germany observe the "prior education" criterion.

Of these, the German data presentations are most revealing about the ways in which foreign student presence and degrees can be treated by international accounts. The Germans offer a very clear definitional line here that settles such questions (or should settle them): they distinguish between those "foreign" students who earned their *high school qualifications* in Germany (a group that includes immigrants, refugees, and even third generation immigrant students who maintain their original national citizenship) and those who earned their high school qualifications elsewhere. The terms are *Bildungsinländer* and *Bildungsausländer*. So, for example, of foreign students enrolled at all levels in 2004–05, 59,678 (or three percent of all students) were *Bildungsinländer*, and 186,656 (or 9.5 percent of all students) were *Bildungsausländer* (DeStatis 2005, p. 35). As for German students enrolling in other countries (all levels)

[16] *EAG 2009* (received after this essay was completed) has gone further, adding tables illustrating the proportion of population entry ratios and bachelor's-equivalent graduation rates accounted for by "foreign" students (see Chart A2.5, p. 53 and Chart A3.4, p. 68). These are welcome additions.

[17] Even so, the Netherlands' education accounting defines *allochtonen* (essentially, minorities) as those with at least one parent born outside the Netherlands, and these, in turn, are divided by Western and Non-Western (Central Bureau voor de Statistiek 2004).

TABLE 8

Categories and Proportions of Non-Native Students in Selected Countries

"FOREIGN" % OF ENROLLMENTS	COUNTRY	TERMS USED FOR "FOREIGN" STUDENTS	SECTOR	BACHELOR	MASTER	DOCTORATE
	Denmark	Not of Danish ancestry	All	10.8	11.3	NA
	France	*Étranger*	All	10.5	20.0	38.9
	United Kingdom	Non-United Kingdom	All	8.9	39.7	41.1
"FOREIGN" % OF GRADUATES						
	Germany	*Ausländer*	University	10.6	42.4	NA
			Fachhochschulen	5.9	NA	NA
	The Netherlands	*Allochtonen*	University		24.2% of all levels	
			Hogescholen		25.9% of all levels	
	Denmark	Not of Danish ancestry	All	9.5	10.4	NA
	United Kingdom	Non-UK domiciled	All	12.7	52.9	43.2
	Australia	Overseas	All	26.3	57.3	24.2
	United States	Non-resident alien	All	3.0	11.2	28.0

SOURCES: ALL DATA IN THIS TABLE ARE DRAWN FROM MINISTRY SOURCES OF THE COUNTRIES LISTED, WHICH CAN BE FOUND ON THE FILE LABELED "INTERNATIONAL DATA REFERENCES" AT WWW.IHEP.ORG/RESEARCH/GLOBALPERFORMANCE.CFM NOTES: "NOT OF DANISH ANCESTRY" AGGREGATES SUB-CATEGORIES OF IMMIGRANTS AND "DESCENDENTS"; THE NETHERLANDS' *ALLOCHTONEN* AGGREGATES SUB-CATEGORIES OF WESTERN AND NON-WESTERN; AND THE GERMAN *AUSLÄNDER* IS CONFINED TO THOSE WHO EARNED SECONDARY SCHOOL CREDENTIALS IN OTHER COUNTRIES

in 2003, we're looking at 61,782 or 35 students for every 1,000 native Germans enrolled at home (p. 39).

One can see the questions remaining even after these lines are established:

1. Are the German students enrolling in other countries included in the numerator of domestic tertiary participation ratios?

2. Are the *Bildungsausländer* included in domestic population numerators for domestic attainment ratios?

3. Are the *Bildungsausländer* included in both numerator and denominator for graduation rate data?

All the guidelines for convergence don't seem to make much of a difference in national data reporting. **TABLE 8** presents a sample from national statistical agency and ministry Web sites that report enrollments and completions for non-native students. Obviously, even with these, the account is incomplete, but one can estimate that, in this sample of OECD countries, at the level of the first undergraduate degree (the rough equivalent of our bachelor's), approximately 10 percent of the student enrollments and graduates (though not in the United States) come from other countries. When international comparative indicators are promulgated, one needs clear rules as to where they go, particularly when population ratios are the preferred method—and to those ratios we now turn.

Synthetic Ratios and Virtual Cohorts

Indicators are the means for fulfilling the challenges of variability in any comparison of multinational inputs: out of complexity, they seek to tell a common story. They find ways to reconcile vastly different systems of accounting, cultural definitions, traditional national reference points, idiosyncrasies of institutions, and nuances of behavior through common templates.

The most preferred form for social indicator presentations is the census population ratio. These ratios—for tertiary education entry, participation, and attainment—are most prominent in OECD's *Education at a Glance 2008*. Their apparent simplicity guarantees quotation in the trade press, the general press, and by policymakers everywhere. Eurostat, on the other hand, is more likely to present absolute numbers for a topic, e.g., students enrolled in tertiary education. Most of what Eurostat labels as "indicators"—e.g., median age of tertiary students or share of women among tertiary students—are not really indicators unless one turns them into time series and presents relative percentage changes against a common benchmark. As soon as Eurostat raises the topic of participation in tertiary education by age bracket, however, one finds an indicator formula, with inputs from national statistical agencies.

Whatever their form, one has to emphasize that, with very few exceptions (the *U.S. Graduation Rate Survey* among them), those input data are estimates based on samples, and not on a full census. To its credit, *Education at a Glance* provides details on the national sources used in tertiary participation and attainment indicators, albeit in Annex 3, thus escaping the notice of most readers. Of the 17 OECD countries that employ national labor force surveys as their primary source for higher education information on these themes, 14 provide data on the nature and size of their samples, ranging from 15,000 to 300,000 households.[18] In this respect, they are no different in basic methodology from the U.S. Census Bureau's *Current Population Survey or American Community Survey*.

All the indicators to which we pay attention hinge on the definition of "age," and across the international organizations that build the indicators, we find a variety of terms and definitions for that reference point. For example, for presentation of entrance to tertiary education, Eurostat prefers the term, "notional age," defined for ISCED 5 as "the age of a new entrant who has started and completed all previous educational levels in the notional period for doing so" (Eurydice and Eurostat 2007, p. 47). So the notional ages of entry for European area countries are all listed as 18 or 19 (Turkey is 17), even though the empirical age of entry varies considerably from that reference point. In a table presenting beginning students as a proportion of those at the "notional age," only those entering ISCED 5B or ISCED 5A programs for the very first time are covered (p. 47). That sounds fine until one remembers that 5A includes master's degrees, that (as we are advised by a footnote) re-entrants in Belgium and Ireland are counted as new entrants, that the Netherlands offers three different classes of beginning students (at a specific degree level, at a specific institution, and in a specific program), and that, as Eurostat admits, "there is a 10-year median age span" in Europe for ISCED 5B students (p. 58). The tertiary entrance rates in this table range from 48 percent in Austria to 91 percent in Sweden, with counter-intuitive figures in between. It's hard to learn anything constructive from this representation.

Age is the most significant demographic reference point in the three types of population ratios used in international comparative data on higher education:

- The *census population ratio*, a straightforward fraction in which the numerator and denominator are unmanipulated raw

[18] See the online "Supplementary International Data Tables," at www.ihep.org/research/GlobalPerformance.cfm.

numbers of an unambiguous age grouping, and the provider of both numerator and denominator is a nation's census.

- A *synthetic age ratio*, under which population groups are defined by age in relation to a given event, e.g., secondary-school leaving, receipt of a first-cycle (bachelor's) degree. The age assigned to the event is asserted as "theoretical," i.e., in the nation at issue, this is the age at which, theoretically, the event occurs. The denominator is provided by the nation's census. The numerator comes from the national statistics authority and/or the ministry responsible for education, following the definitions and instructions in the *UOE Manual*.

- A *virtual cohort ratio*, under which population groups are defined by moving averages or sums of their behavior over time with respect to the phenomenon of interest, and the moving averages are those of "typical" (not theoretical) age bands.

We have already invoked a few census population ratios. The other ratios are more challenging. But one doesn't see the age reference points in tables based on synthetic ratios or virtual cohorts in *Education at a Glance 2008* (though you *may* find them in *EAG's* online appendixes). Since very few countries sponsor longitudinal panels, i.e., de facto cohort tracking systems (Karduan and Loeve 2005), the easiest calculations of completion rates, for example, rely on the synthetic ratio. For example, OECD defines "completion rate" as "the ratio of the number of students who are awarded an initial degree to the number of new entrants to the level *n* years before, *n* being the number of years of full-time study required to complete the degree" (*EAG 2008*, Glossary, p. 3). Problem (and OECD acknowledges this later in Annex 3 of *EAG 2008*): there is no uniform length of a degree program in any of the systems whose data are presented, and, in the middle of the degree cycle transitions of the Bologna Process in Europe, a majority of those systems are changing lengths of degree programs. So what does one do? Create a weighted ratio, that is, the proportion of beginning students in three-year programs who finished in three years, the proportion of beginning students in four-year programs who finished in four, in five, etc. How would that be matched against another system that is all three-year? All four-year? and so on. While the *UOE Manual* requires a weighted average for countries using a theoretical graduation age metric (p. 27), it is not clear who follows directions and who doesn't.

The established alternative involves a combination of "net entry rates" and "gross graduation rates," which proved to be messy, but was ensconced in comparative reporting until problems with full-time and part-time status and ISCED 5B versus 5A accountings began to require more footnotes than the calculations were worth. Perhaps in response, OECD moved from population ratios to virtual cohorts to determine a "net graduation rate." The definition is offered in the Glossary for *EAG 2008*: "Net graduation rate measures the percentage of persons within a virtual age cohort who obtain a qualification from a given level of education, thus being unaffected by changes in population size or typical graduation age. The net graduation rate is calculated by dividing the number of graduates at each single year of age, by the population at that age, and summing these over all the ages" (p. 9). Without burdening the reader here with a simulation of a "virtual age cohort" (you will find it in the longer online version of this essay), the author assures that it works, provided that the census is accurate for both graduates and population by *single age year*, and that all countries are counting the same kind of person, e.g., legal residents of the nation. But it is difficult to say what the results mean if the underlying age bracket dynamics differ between countries that experienced population spurts in the 1990s (Ireland), dramatic expansions of their higher education systems in the 1990s (Finland), or at least temporary contractions of higher education systems when tuition was introduced (Austria in 2001). Virtual age cohorts would neither smooth out nor explain the effects of these bumps in the road. And how do any completion rates advise a nation's policymakers and academic leaders? The number is empty and void, and calls for us to start looking toward other indicators that might help nations actually do something to achieve their higher education ends.

Slouching Toward Future Data I: The Role of Secondary School Structures and Processes

A continuing theme in judging international data on higher education covers the multiple paths through secondary school systems, some of which lead to higher education (and even within that broad category, to different kinds of higher education) and some of which don't, with those populations subsequently subject to lifelong learning analyses and potential later entry points through non-traditional routes (e.g., Assessment of Experiential Learning and bridge programs). In one sense, these are access issues, and bear on our judgment of opportunity for tertiary education in whatever country is at issue. Our considerations under both secondary school connections and inclusion have less to do with current international comparative data than with its future possibilities.

In another sense, these tracks should affect the way one judges the through-puts of the higher education system. It's an old argument: the more restrictive the lines of entry, the greater the likelihood that those who enter will complete. Japan offers the classic case: the entrance examination is the sound barrier—once broken, everybody graduates. The population ratios used by OECD thus do not reflect so much on a nation's effort in higher education as on a nation's gross education template, and in that template, the size and historical weighting of components of the national economy play notable roles in our interpretation. Germany is an obvious case: a manufacturing export-oriented economy that requires a large skilled crafts and mid-level technical workforce, hence strong vocational and apprenticeship sequences that do not lead to tertiary degrees. There is obviously nothing wrong with this in the context of the German economy in 2009. Given demographic projections and growth of the service sector, German needs will likely be somewhat different by 2025.

This essay is not the occasion to examine comparative data on secondary education, but it is legitimate to ask, as a background reference point, how one might judge the dynamics of pathways through secondary education in terms of their effect on core tertiary education indicators. The underlying question for international data comparisons focuses on the proportion of secondary school students who qualify to enter tertiary education under national rules, guidelines, and customs. All of these control the direct flow. The Dutch illustrate—and in an exemplary manner—with an "education matrix" of annual "enrollment flows" from every level of education, with tracks, from primary to university. The initial population of 1.6 million in elementary school flows forward, backwards, and out of the system at each level and within each track ("vocational stream," senior general secondary, pre-university, and vocational). The flow is complicated further in auxiliary tables that add in categories of special education and part-time status at each stop. Across all these flows, one observes not only the contraction in the tertiary education "qualifying population," but also expansion in the separate bins of non-qualifiers to be pulled back into tertiary education at a later point. Other countries offering three secondary school tracks (e.g., Portugal, with academic/general, technical, and vocational) could perform similar analyses. It's a variation on Barro and Lee's

"perpetual inventory" methodology. Then there are the national examinations. We could spend a few doctoral dissertations on them. Some are tertiary entrance (e.g., Finland and Portugal), some are secondary school leaving, some serve both functions. They are all subject-based, and none of them look like either the SAT or ACT. Examined carefully, they tell us what each national system considers "qualified" to mean, i.e., from their prompts, one can deduce the learning outcomes expected of secondary school graduates. In an international qualitative comparison, teams of subject matter experts could try to match and rank them by degree of challenge. One doubts such an attempt will ever be made, particularly given the number of language borders to be crossed and reconciled.

We are interested in the examinations for other reasons: how they work to sort and direct students within their national systems. For the most part, what we think serve as turnstiles to higher education are actually secondary school leaving exams. The French *Baccalauréate* is just such a case, but one in which there are three types of examinations, with distinct routes for subsequent education. Of the *Baccalauréate général* students, everybody continues to higher education. Of the *Baccalauréate technologie* recipients, about 75 percent continue, with a plurality into ISCED 5B programs. Of the Bacc Series *professionelle*, only about 22 percent continue, with *Sections de technicien supérieurs* schools and their ISCED 5B credentials as the dominant destination.

The United Kingdom system, too, uses GCSE and A-level examinations in individual subjects as school leaving requirements, but the A-levels also serve to place the student in a priority line for selection to their universities of choice. In a plurality of European countries the entrance rules are comparatively simple: pass the exam and you can attend any institution you wish and in any field, subject to *numerus clausus*, i.e., seats available. The entrance process in the United Kingdom is both centralized and more complex. The student accumulates "tariff points" on a University and Colleges Admissions Service (UCAS) ledger, based on how many A-levels were passed and with what grades, courses taken in secondary schools, and other factors. UCAS then plays a pivotal role in prescribing the student's options. The entrance process in Portugal is also centralized, but with the student expressing six preferences for a combination of institution and preferred field, selecting from a portfolio of national exams (ENES) those that are in harmony with the field, and from all that, plus a secondary school diploma, grades, and *numerus clausus* at the institutional end, selected appropriately.

These sortings out of a "qualified" population are not dichotomous affairs. If nations are ultimately interested in a more equitable distribution of tertiary participants, let alone in increasing their numbers, the non-qualifying group can be further divided by performance (Council of the European Union 2004). Under this process, students evidencing low levels of literacy as teenagers are considered truly "disadvantaged," and require a different set of interventions than non-qualifiers who can later take advantage of second chance options through preparatory year programs (Canada), bridge programs (United Kingdom), community-based education programs leading to part-time provisional enrollment in Sweden, or through large-scale processes for recognition of prior experiential learning (the *Validation d'Acquis de l'Experience*, or VAE, in France). The latter groups can be counted and aggregated in an inclusion metric, something we don't see now, even in Eurostat's exemplary recent work on indicators of access by social background in Bologna-participating countries (Eurostat 2009) and which is a great deal more instructive than census population ratios or virtual cohort markers.

Slouching Toward Future Data II: Looking for Inclusiveness

If we recall Barro and Lee's model of education stocks and flows, and reflect on the streaming functions evident in secondary education in many countries, there is no doubt that, as OECD itself has concluded, the population inequities we observe in higher education are a direct outgrowth of lapses and exclusions in pre-collegiate schooling (Santiago, Tremblay, Basri and Arnal 2008). When "eligibility opportunities" (p. 17) are restricted at pre-tertiary levels, the effects are likely to be observed in tertiary education. What happens when higher education systems expand—and dramatically? Are previous exclusions overcome?

In an OECD country context, the jury is out on this core question, principally because (a) countries took on tertiary expansion from different levels of stock, (b) expanded at different rates, and (c) introduced alternative structures and processes for the provision of tertiary education (e.g., private institutions, part-time status, new classes of non-universities, procedures for recognition of prior experiential learning). These measures may only have moved inequities to another level. For example, in some countries (e.g., Poland and Slovenia), ironically, one finds discriminatory tuition for part-time students, i.e., full-timers attend free of tuition, part-timers pay. These charges are particularly ironic because part-time status is seen by an increasing number of Bologna-participating countries as a way to increase access for those previously in limbo.

As noted at the outset, the United States is not alone in seeking greater inclusiveness in higher education. Virtually all OECD countries look for under-represented populations, and devise strategies to increase their participation in higher education. One of the core "action lines" of the Bologna Process in Europe, known as the "social dimension," is focused hard on the mechanisms for increasing access, second chances, and alternative routes into tertiary level education. The definition and accounting for these populations, however, differs by world area, and sometimes, by country.

Historically, the principal participation concern of OECD countries was with the proportion of women in tertiary education, by ISCED level and degree program. Indeed, all presentations of data, both national and comparative, emphasize the gender variable.

Increasingly, though, this topic is taking another turn: women are now the majority of just about everything everywhere (physical science, engineering, computer science, and technology fields excepted). We're all starting to worry about men, not as a proportion of enrollees (this is not a half-full/half-empty glass), but in terms of population participation and completion rates.

Of greater concern, but not in comparative data presentations, are sub-population categories singled out by national authorities, and, in this respect, others are not like us. Analysts of U.S. higher education confine their representation questions principally by income and race/ethnicity. The reason for our concern with participation and completion rates for low-income students is fairly simple: there is a dollar sign on every college door, often followed by a substantial net price. In most other OECD countries (save Canada, Japan, and Korea), this cost is not an issue since tuition is either free or minimal. One is not surprised, then, by high "access" rates in Finland and Sweden, for example, where tuition is an unthinkable concept. To the extent to which cost of attendance is an issue, it is focused principally on ancillary matters, housing in particular. *Eurostudent III* (2009) has well documented varying degrees of financial strain for current students across 21 countries, with students working from 10–20 hours per week in 10 countries, and 20 or more hours in three others (p. 121). By U.S. standards, this degree of work commitment is low, but then again, we have a dollar sign at every door.

But the bottom line is that the majority of OECD countries do not focus on income to identify under-participating populations. In fact, they rarely collect data on income in the context of tertiary education at all, and possess but fragmentary data on other socio-demographic features. The "social data" in Europe, in particular, come from sources other than the national agencies, e.g., the Eurostat Labor Force Survey (LFS), Eurostudent, and Luxembourg Income Survey (LIS), which is particularly rich with microdata but covers only 17 countries and produces data usually lagging by three years. As the Bologna Process Follow-Up Group on the Social Dimension and Mobility marked, there is no "comprehensive data collection [in Europe] on the social dimensions of higher education" (BFUG 2007, p. 19).

Race/ethnicity is justly a primary concern in the United States because minority populations are on track to become the majority population well before the end of the current century. We are a nation of immigrants, and continue to be; most others in OECD are not (Canada and Australia excepted). Online table generators from the U.S. Census Bureau will demonstrate that nearly 60 percent of our projected increase in the 25–34 age group to 2025 will be Latino, a projection justified by what is already in the pipeline. And with this, a notable Asian expansion, and measurable additions from Eastern Europe and the Middle East, comes a sizeable group of NNSEs (Non-Native-Speakers of English). The challenges we face for higher education

inclusion of all these populations, in their varying characteristics, are both considerable and multi-faceted.

But all that does not mean we cannot learn from the ways in which other countries identify and target low-participating populations. Language, we know, creates reality as well as it reflects reality, and, in this case, language creates policy realities. Think, for a moment, with the way the Council of the European Union and the European Commission (2004) define "disadvantaged," i.e., unlike the United States, there is no explicit mention of income, race/ethnicity (in France it is almost forbidden to identify anyone by race) or non-native speakers of national languages, rather:

- "People with low levels of literacy or qualifications."
- "Groups living in disadvantaged areas or outlying regions."
- "People with learning difficulties or with disabilities." (p. 27)

The most intriguing and instructive of these definitions is the second, because it leads to geocoding, and more than any other methodology, geocoding tell you precisely where to drive when you go out to fix a problem. One can observe its policy effects in Poland in the 1990s, where private institutions were encouraged to open in isolated rural areas; and in Finland in the 1990s, when the higher education system increased by a third with the establishment of 11 polytechnic universities (AMKs), some in isolated provinces that had never previously seen an institution of tertiary education (OECD 2003).

In more urbanized environments, and in its most sophisticated formulations in the United Kingdom,

"the full extent of participation inequalities is revealed by using neighborhood level geographies such as census wards. These show that there are broad and deep divisions in the changes of going into HE according to where you live...maps of local participation patterns—such as those presented through POLAR [a geocoding system now in its second iteration, POLAR2]... reveal that many cities and towns are educationally divided..." —Higher Education Funding Council 2005, pp. 10–11.

The next level of zoom for this analysis is the postcode within the incorporated unit, and, through a lifestyle analysis program called MOSAIC, to housing types ("Council flats, low rise council, Victorian low status, Town houses and flats, Stylish single"—Ramsden 2007, p. 8). While we're sure community planners and sociologists everywhere could come up with local culture versions of this taxonomy of the built environment as a proxy for economic status, one doubts that an international standard-setting team could arrive at a consensus on a generalized version.

These various geodemographic analyses don't always mean that one will find what one expects to find. Scotland developed a Scottish Index of Multiple Deprivation (SIMD) applied to over 6,000 data zones (low income was one of the measures, but defined by tax bracket), and crossed this measure with an "Age Participation Index" to sharpen the focus for targeted interventions. When the Scots analyze these phenomenons by region, however, they conclude that students from the highest SIMD group are actually underrepresented, whereas those from the lowest two quintiles of SIMD are "slightly overrepresented" (Scottish Funding Council 2007, p. 21). But what Scotland teaches us for a more sophisticated analysis of low-income/low-SES participation is to make it relative to the distribution within geographic area. That is, for example, take the SES distribution of Cook County, IL and match it against the SES distribution of those attending/entering higher education. If 38 percent of the overall SES distribution is in the lowest quintile, and 36 percent of the higher education population is in the lowest quintile, for example, you have a relative match. If the proportion participating in higher education was 20 percent, it would be a signal of significant under representation; 50 percent would indicate positive momentum in an otherwise underrepresented group.

Not that analysts in the United States haven't tried geodemographics. But the closest they have come to the precision of POLAR or SIMD data zones (Noland, Davis, and Kelly 2007) has been the county as the unit of analysis, arbitrary weightings of components of "educational need," and a substantial ignorance of migration, which, in the United States, involves 15 percent of the population moving across county lines every year (Schachter 2004). What emerges looks more like a board game than a serious targeting of low-participation populations. Cook County would not, in fact, be a unit of analysis under the United Kingdom or Scottish methodologies.

In comparative data that identifies and quantifies low-participation populations for inclusion in tertiary level education, geodemographic analysis is appealing because it is built on relatively common definitions across borders. With the possible exception of levels of parental education, most of the other social category options—class and occupation for the most prominent examples—offer too much cultural variance. And, to repeat, none of the social category options, including race/ethnicity and second language dominance, tell policymakers where to go when they jump in their cars to go out, analyze, and fix the problem.

Our brief exploration of the social dimension of higher education is intended to prod national authorities to shape and agree on the types of data that can be rolled into indicators that cross borders with minimum footnotes. It is time to make some specific suggestions on this playing field.

Can We Fill the Spaces Between Numbers? Some Suggestions

Smilla, with whom this essay began, was a mathematician, a talent that came in handy in rooting out mystery. But it wasn't merely a talent: her constant reflections on the spaces between numbers were schooled. In an icy maelstrom of an action drama, she could step back and ask what was learned from a continuous ratcheting up of apparent chaos.

So what was learned here? First, that there are three linked states-of-being for comparative social data of any kind: macro-economic, demographic, and communications. Of these, the communications environment is the driver of interest. Public, policy-support analysis, and policy-maker understanding is a snapshot affair. A single bar-chart with two sentences of gloss passes for a definitive statement despite all the ellipses inherent in such presentations. The upshot is a world of cartoon-like propaganda. Policies and programs created on the basis of such shallow and often misleading information risk both unintended and non-consequences.

In terms of a bill of particulars, we learned that:

- We have a complex and imperfect system of comparative international data on higher education.
- National traditions and habits resist attempts at reconciliation by international reporting organizations.
- There is an obvious lack of coordination among agents of data gathering and reporting within the same borders, resulting in noticeable inconsistencies. Too many countries cannot track individual students, so wind up estimating true first-time students, participation, and completion.
- A majority of post-industrial democracies reporting higher education data under international protocols are in process of considerable change in their underlying higher education struc tures, principally as a by-product of Bologna Process reforms, hence there is a good deal of volatility in the data observed.
- International reporting organizations have developed seemingly rational methodologies to lend consistent shape to data, but with results that are too often opaque.
- The published data tables and narratives in *Education at a Glance 2008*, in particular, require enough qualifications to generate online appendixes more voluminous than the document itself.
- Missing information, documentation, and explanations remain in *EAG* even after all the appendixes and footnotes. While these are available through personal contacts and inquiries, it shouldn't have to be that way.

So what might be done? Recognize, first, that some of the following issues are already being addressed by the international reporting organizations, which are increasingly conscious of existing shortcomings and lapses, and are increasingly challenged by analysts who read their tables, glosses, and footnotes very carefully. That said, there would be three objectives in reconstruction:

1. Simplicity, hence transparency. That means putting everybody on the same scales and observing the same definitions. National agencies that do not observe the definitions should not see their data reported for the indicators in question. No more ambiguity, no more latitude, e.g., a "graduate" is whatever the country wants it to be. No more "notional" age, when age is such an important demographic variable. Systems should have (and many of them do) empirical age data for entering, enrolled, and graduating students.

2. Condensed comprehensiveness. This objective sounds like an oxymoron. What it means is putting all information necessary for interpreting a table in the table itself and not in half-accessible appendixes. Tables should be stand-alone creatures. They are duplicated, after all, and distributed at policy meetings as single pages without footnotes, or (more commonly) they are extracted on PowerPoint slides, again, without footnotes. So, for example, if *EAG* is presenting a table of cohort survival rates, it should make room for a column indicating the precise number of years for which the cohort in question was tracked, and provide explicit time-markers, i.e., beginning year, censoring year.

3. More meaningful indicators. Attainment rates mean nothing without their social dimensions, i.e., categories of inclusiveness. Participation rates mean little without a filter for the *qualifying* population and a clear definition of "qualifying." Age and gender distributions, the current "social dimension," are easy and traditional, but do not address the nature or location of the populations with which all nations are most concerned. And, as the Bologna Process in Europe has demonstrated, simple attainment is no longer the exclusive feature of interest.

Indeed, the Bologna Process looms as a powerful driver of reforming comparative higher education data. Bologna is the largest and most ambitious restructuring of higher education ever undertaken, moving, since 1999, across 46 countries, 23 of which are members of OECD, and affecting 4,000 institutions and 18 million students. From its inception, Bologna has been bereft of student-level data, a disappointment recognized at virtually every biennial meeting of the education ministers of those nations, for student histories will constitute the ultimate measures of success of Bologna's core reforms. Their participation, progress, attainment, and subsequent mobility and labor market status will be the primary arbiters of a decade's efforts to bring convergence to the tertiary systems of Europe. And the degree to which these measures can be joined by non-European OECD countries would produce a new class of comparative indicators that will carry more meaning than the population ratio and virtual age cohorts we now stumble through.

But population is still a governing feature of comparative analysis, particularly in light of aging societies and shrinking youth cohorts. As Yonezawa and Kim (2008) point out, higher education institutions in Japan and Korea have already experienced excess capacity (pp. 204–205), and other systems are sure to follow. What does one do with excess capacity, the by-product of system massification? Japan has merged some of its public universities, and the projections for Korea estimate the closing of roughly 100 HEIs by 2020. Other countries might respond to similar pressures with aggressive recruitment and support of foreign students, subsidies for domestic students to continue to second-and third-cycle degrees (Japan and Korea, as Yonezawa and Kim demonstrate, currently evidence very low rates of continuation from bachelor's to graduate programs),

and/or adding programs to recapture, at later points in their lives, students who originally did not qualify for tertiary entrance, i.e., become more inclusive. Traditional data reporting and indicator construction will not shed light on policy decisions addressing these dramatic changes. Other indicators are necessary.

The Bologna Process Follow-up Group in Europe recognizes the same pressures in light of an aging Euro-population and a shrinking traditional-age pool for higher education. The response goes beyond lifelong learning mantras, structures, and processes to the challenge of preserving "solidarity between generations" (BFUG 2008, p. 13). As for lifelong learning itself, the BFUG statement is worth italics because it reinforces the emphasis of this essay on the need for data marking inclusion by recapturing low-participation populations at later moments in life:

> *"Widening access and diversifying the body of learners are objectives that are met through the implementation of student centered learning and through flexible learning paths connected to qualifications frameworks and to recognition of prior learning...this will entail a mainstreaming of lifelong learning in institutions of higher education and will call for changes in the legislative framework..."*

One doesn't achieve such objectives without data guidance, and beyond the default reporting of entrants, enrollments, and completions for the new Bologna distribution of degree cycles, what the Bologna countries need for evidence non-Bologna countries also need. Call them "non-standard indicators." They are included below, among our more discrete suggestions:

ISCED. We know that this system is under review and reconstruction, but enter a plea here for the following gradations in tertiary education (obviously including new categories):

Level 8: Doctoral
Level 7: Long-cycle professional (e.g., medicine) and post-baccalaureate first-professional
Level 6: Master's and post-baccalaureate certificate programs
Level 5A: First-cycle degrees, i.e., bachelor's or their equivalent
Level 5B: Short-cycle degree programs

Schneider (2008, pp. 319–322) also proposes eight ISCED levels, but in a far more complex framework with two or three subcategories at each level except the Doctoral/Advanced Research. We argue against clouding the task with program duration, program orientation, or institutional type, particularly within the first cycle. Both national ministries and international comparative reporting organizations have enough difficulty with existing sub-categories. Dividing space by space yields darkness. At the same time, though, we must acknowledge that ISCED is, in fact, a ladder that assists in the construction of other policy and program-relevant indicators that we do not see now, e.g., rates of cohort progression from one rung to the next. Call these "penetrability" indicators.

Participation and inclusiveness. Neither Gross Enrollment Ratios nor census participation ratios are as instructive for policy purposes as setting the denominator to students who completed upper secondary school in the country at issue, and by "completed" is meant "was awarded a diploma" (Portugal does this now, and by age blocks). Call this the basic quali-

fying population, as it is the population for which the education system of the country is responsible. It includes academic track, general track, and vocational track upper secondary students. It can be divided by traditional and non-traditional routes (a bi-modal presentation). Once this basic system responsibility metric is established, one can create derivative indicators by high school track and by national examination status (where these exist). One can also establish virtual age blocks, e.g., 20–24, and, within them, social dimensions, to illustrate the changing volume and nature of the qualifying population. One then asks, "of the qualifying population, what proportion enters short-cycle degree programs and first cycle degree programs (a) immediately following qualification and (b) within [let us say] three years?" That should be simple, clear, and without footnotes. The qualifying population then becomes the core of cohort histories.

The second virtue of a "qualifying" flag is that separate analyses can be presented for non-qualifying students, thus opening up the potential for data that capture the extent to which they enter the tertiary system at later points in their lives (to which the 2008 Eurostudent survey opened the door), a critical piece of both the inclusiveness objective of the social dimension of higher education and lifelong learning objectives.

In fact, participation is the primary category under which inclusiveness data can and should be set. Given the various definitions of low-participation populations we have seen in the literature and policy documents of OECD countries, it is suggested that each country develop (if it has not done so already) education participation data for the following:

- Isolated populations, a concept requiring agreement on a geodemographic definition;
- Students with disabilities, a concept requiring agreement on a clear set of parameters;
- Resident ethnic minority populations, divided by Western and non-Western origins (for Japan and Korea, the reference points would be Asian and non-Asian) as well as indigenous minority (applicable in the United States, Canada, Australia, and some Scandinavian countries); and
- Family income by quintiles (where these data are available).

And then negotiate the final common parameters. Australia, for example, has used isolated populations, indigenous populations, and students with disabilities, and set targets for each group, first in terms of access, and then in retention and completion against the rates for their opposites among higher education students, e.g., the retention rate for isolated rural students should be at least 90 percent of that for "metropolitan" students; the completion rate for indigenous students should be at least 90 percent of that for non-indigenous students (Bradley *et al* 2008, p. 45). The data gathered under these dimensions should look ahead toward time-series indicators so that nations can map rates of improvement in access to tertiary education.

Other categories are more difficult. Even if nations agreed on occupational categories, for example, they would be applied to the parents of traditional-age students and to older students themselves, and placing those two groups in the same bin holds no logical water. So one could not use a category such as "mid-level professional" without leaving a trail of ambiguity. Even

parental levels of education, as Eurostat has demonstrated, are problematic (Eurostat 2009, pp. 65–67), as their potential effects are confounded, e.g., in countries with free tuition.

Cohort tertiary histories. Many of these are born of Bologna objectives for increased flexibility in higher education systems. They include what this essay calls "penetrability indicators," i.e., measures of student movement from one tertiary ISCED level to another.

- *Continuation from first-to second-cycle degrees (in U.S. terms, from bachelor's to graduate degrees), by field, and type of institution.* Germany does this now (see Minks and Briedis 2005, p. 85), and our work with ministry data reports suggests that France, Japan, the Netherlands, Switzerland, and the United Kingdom provide at least some of the requisite data, and could offer a full portrait. So can our National Center for Education Statistics, with some minor modifications to its Baccalaureate and Beyond longitudinal studies. When European countries moved from long first degrees to the bachelor's and master's cycles, the question of whether students would move directly from the new bachelor's degrees into the labor market or maintain their previous longer-term study vision but parse it out over two degree levels became critical to assessing the effects of the degree-cycle reform. If the master's degree is becoming the new standard end-point for basic tertiary education, we want to know where that is happening and in what fields. A February 2009 *Flash Eurobarometer* special survey showed half of current bachelor's candidates across 31 countries intended to continue directly to master's programs (Gallup Organization 2009, p. 45). Change of field from first-to second-cycle degrees, along with international mobility (first degree in country X; second degree in country Y) adds texture to the basic datum.
- *Continuation from short-cycle to first-cycle degrees in national systems that offer both.* Three data points constitute the story: completion of the short-cycle degree, continuation to the 1st cycle, and completion of the first cycle. France can offer these data now for the DUT, England for the Foundation degree, the Japanese for Junior College "new graduates," and the United States for the associate's. Canada, Korea, and Portugal should all be in line to do the same. We may call this phenomenon "transfer," but the story it tells is one of vertical penetrability.
- *Accounting for non-traditional points of entry and progress in national systems.* This is a difficult territory, as it covers entrance and enrollment volumes through bridge programs, special preparation-year programs, recognition of prior experiential learning, open universities, provisional status, etc. These are all catch-bins for those who either were not in the qualifying population at the time it was defined or who had entered tertiary programs but left without credentials at an earlier point in their lives. The 2008 Eurostudent survey allowed creation of a narrowly defined indicator based on "*the validation of prior learning and work experience—with or without entrance examination*" (Eurostat 2009, p. 59), and Eurostat observes that when there are more ISCED 5 entrants than upper secondary school graduates in a particular country, one has a crude measure of those entering by non-traditional means (Eurostat 2009, p. 60, 197). This is a key indicator that wants more work, and national systems willing to use this indicator of flexibility and (potential) means of inclusiveness would have to agree on the contents of a single bin of reporting.
- As a by-product of all of the above, along with an irreconcilable range of practices in accounting for entering students, we suggest dropping all indicators that label "first-time" tertiary students (except in true cohort completion rate indicators),

and replace it with "first-year" students at the degree level in question.

- *Of lesser priority are accounts of change-of-institution, change of sector (where applicable in binary systems), and change of major field during students first-cycle degree history.* The data presentation of the Dutch ministry (OCW 2007) indicates that the raw material is present; one finds cross-sectional estimates in Germany (Heublein, Schmelzer, and Sommer 2005) that hint at the ability to produce this information; and we know that U.S. longitudinal studies can produce data for all these attendance pattern features. Why pay attention on a comparative basis? These are all measures of student mobility internal to national systems, but to the extent that they prove transnational (at least among OECD countries) we would have indicators of comparative volatility in student choice behavior that can serve as guidance for enrollment management.

Degree quality. It is suggested that, when tables of attainment or graduation rates are presented by the international organizations, a column should be added to indicate whether the country in question has implemented (not "thinking about it" or "working on it") a qualifications framework for its degrees. QFs do not guarantee the quality of degrees, of course, and do not necessarily spell out every benchmark a student must reach to qualify for an award, but they do mark a basic quality assurance pledge by the national system. One recognizes that, in some countries (Canada and the United States) the national authority does not possess the authority to adopt a degree qualifications framework, and in still other countries (Korea) the majority of institutions of higher education are private and beyond the reach of ministries. Nonetheless, whether we judge them as meaningful statements or not, national degree qualifications frameworks have now been adopted and "self-certified" by seven OECD countries (Australia, Denmark, Germany, Ireland, the Netherlands, Sweden, Scotland, and EWNI [England/Wales/Northern Ireland] separately) and others are sure to follow, in part because it is a Bologna Process requirement in Europe.

Program delivery. At the present moment, data on the nature, extent, and sources of eLearning in tertiary education are minimal and chaotic. To assess the international penetration of these technologies, someone out there, with the primary sponsorship of OECD and UNESCO, should organize the national ministries to gather and present data on the order of:

Number of programs conducted entirely by eLearning technologies;
- by degree level, institutional type and control, and disciplinary field;
- with total student enrollment in those programs,
- by urbanicity of student location, by age of student.

Number of institutions or consortia offering discrete courses by eLearning technologies,
- number of courses offered by degree level,
- number of courses offered by disciplinary field,
- volume of enrollments (this will not be a headcount).

The search for comparative distance education data, though, would not be undertaken merely for the sake of evaluating broadband access. This essay would wager that it is also one of the measures of inclusion, since it offers both isolated populations and working adults who may have been by-passed for tertiary opportunities the chance to advance their educational qualifications. In fact, Eurostat includes distance education students in its aggregations of part-time status (Eurostat 2009, p. 63), and part-time is one of the mechanisms of inclusiveness.

One could continue, but these suggestions would add measurable meaning to comparative indicators, and provide much needed assistance to higher education planners everywhere. That would be a start.

The United States is not exempt from reform. We are part of the convergences suggested here, too, and could present a much clearer picture of what we do in higher education with some basic changes in the ways we shape and report our data. Some of these are obvious and won't take much to execute; others are more radical. In a very politic phrasing, it is suggested that we consider:

- Submitting only system, and not institutional, graduation rates based on our Beginning Postsecondary Students longitudinal studies, and not worry that we produce such data only every six years or so. Rather a full and honest accounting that lags the day than a current but distorted half-account. This account can be divided by enrollment intensity: part-time, full-time, and mixed.

- At the present time, the United States is one of very few countries that does not present an age distribution for entering students. We can do it on the basis of the sample in the Beginning Postsecondary Students longitudinal studies, and if we are confident in what we see of it in annual IPEDS enrollment reporting, there is no reason for holding back.

- In what would be a major overhaul of our data, re-scope all sub-baccalaureate populations by program status. What does that mean? At the present moment, for example, all our entering community college students are assumed to be degree-candidates. They are not, and everyone who has worked over community college data knows that. So, our annual IPEDS survey should ask all institutions that award associate's degrees to report entering and enrolled students as either workforce development certificate candidates (for an ISCED 4 ledger line), wholly remedial/ developmental education students (for an ISCED 3A ledger line), non-degree continuing education students (ISCED 4), and degree-candidates (ISCED 5B).[19] Then, for international comparative data, submit only the ISCED 5B population for purposes of entering, enrolled, and graduating calculations. Other countries' institutions devoted to short-cycle degrees generally do not house populations other than degree candidates. Our community colleges are compared unfavorably with them when the putatively tertiary population is diluted by other missions. There is nothing wrong with those missions: they just don't belong in international comparative data on what is recognized as higher education. Filter the population as indicated, and the United States will find its enrollment ratios down and its graduation rates up. Surprise?

Closing the spaces. Let us rephrase the core question of this excursion: instead of comparing participation and attainment, should we not try to compare national student-level *histories*? One doesn't hear this often, but in a world that has moved beyond economic borders, our students are headed into the same labor market, whether cooperatively in place and time, or in cyber-commerce or cyber knowledge-production. International mobility is a fact of life in advanced post-industrial democracies—and you don't have to leave your desk to be mobile. Should not we desire some comparative benchmarks of our students' level of preparation for this economic and cultural order, and would not highlights of their academic histories—not some transnational examination—serve the purpose? Creativity in the use of unobtrusive data is called for.

[19] The author would go much further, and set a threshold of more than six additive credits attempted in the first calendar year of attendance for a student at any level to be reported as a beginning student. One-course-good-bye students might be classified and tracked in a separate category, as the Swedes do.

Otherwise we will be left with half-measures of human capital. Think about it: there are no substantive reference points in all those virtual cohort and synthetic ratio estimates. The whirlwind of numbers does not offer any insight into the knowledge and skills actually obtained at the level of schooling we care about here. And if you don't have these, what convincing measure of human capital do you have?

EAG, UNESCO Bulletins, and Eurostat reports are not going away, and will not be overhauling methodologies in which they have invested years of work, or breaking with presentations that carry histories of a decade or more. Once a communication becomes a touchstone, it carries momentum and expectations. Specific tables have fan clubs, and fans do not like to be disoriented or disappointed by changes in the play book.

But there is no question that, given the extent of current reconstructions of tertiary level education across most OECD countries and their imitation by non-OECD countries, along with what we recognize as dramatic demographic change, and a universal concern with low-participating populations, we all need more meaningful indicators than our international arbiters currently provide. Tinkering at the edges of current data collection will not provide that meaning, but the national statistical agencies are capable of providing it. We are, to twist Smilla a bit, missing something that is too important to miss—and, with a little work, we will find it in the "in-between spaces."

Appendix A

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Appendix B

Appreciation for Providers and Clarifiers of Data and/or Translation Assistance

Eduardo Coba Arango	Ministry of Education, Spain
Hanne Bech	UNI-C, Denmark
Marie Burton	Statistics Canada
Thierry Damour	Eurydice, France
Michael Davidson	OECD
Jan-Åke Engström	Högskoleverket (HsV), Sweden
Giovanni Finocchietti	Fondazione Rue, Italy
Ewa Foss	Statistics Sweden
Mats Haglund	Statistics Sweden
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Lene Mejer	Eurostat
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François Nault	Statistics Canada
Anja Palicka	Stockholm (Swedish translations)
Nuri Peker	StatBank.dk, Denmark
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Tom Snyder	National Center for Education Statistics, United States
Bjorn Sedman	Stockholm (Swedish translations)
Harald Titz	Ministry of Education and Research, Austria
Tom Weko	National Center for Education Statistics, United States
Johanna Witte	Bavarian Institute for Higher Education Research and Planning

Appendix C

Qualifications and Sources

The author, Clifford Adelman, who spent 27 years with the U.S. Department of Education, building or editing three national data sets for the National Center for Education Statistics, and sits on four of its technical review panels, began the research for this essay with a seemingly simple challenge: using information from national ministries and statistical agencies, to build a spreadsheet with the most recently available single-year numbers for 20 OECD member countries for the following core data points: total enrollments, beginning students, part-time students, and degree awards at levels comparable to both U.S. associate's degrees and bachelor's degrees.

Eight of the 20 countries offered online table-generators for this information, and the balance of the information was available from reports available online. In addition to English, the languages involved in this work were Dutch, French, German, Italian, Portuguese, Spanish, and Swedish. The reason for starting with actual numbers was to identify and understand the raw materials that surely must be used by international organizations such as OECD and UNESCO in building comparative indicators of higher education participation and attainment. Some 89 reports in addition to the table-generators were involved in this and related country-specific data tasks. All these specific country references are listed in the online Supplement to this essay, "Country References," at www.ihep.org/research/GlobalPerformance.cfm

The analysis was radically inductive. That is, as the data from each country are identified, one begins to aggregate definitions of elements, missing elements, most recent dates of reporting, etc. for later matching against the manuals and handbooks of international reporting organizations such as OECD, UNESCO, and Eurostat. One marks points of harmony and points of dissonance. The inductive method inevitably produces branches of concepts and arguments that were not part of the original grid of questions. Each branch is then pursued in both the literature and other reports from national ministries and statistical agencies. The final selection of concepts and illustrations presented in this essay is based on a process analogous to statistical factor analysis. That is, one asks what notions fit together—and in what order—to present an argument, and inevitably sets some strands of analysis aside.

The author also spent live time with OECD, Eurostat, Statistics Canada, and National Center for Education Statistics personnel who are both responsible for much of the data cited and extraordinarily knowledgeable about the issues raised in this essay, and joined Eurostat, Statistics Canada, and NCES personnel in a plenary presentation of the 2009 Forum of the Association for Institutional Research, bringing attention of the U.S. institutional research community to many of the issues raised in this essay. Included in live discussions, too, were officials of statistical agencies in Austria, the Netherlands, and Sweden, and e-mail communication with other higher education officials in Australia, Denmark, France, Germany, Italy, Spain, and the United Kingdom.

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