The Roles of Tertiary Colleges and Institutes: Trade-offs in Restructuring Postsecondary Education

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1. INTRODUCTION

In many developed countries, the landscape of tertiary education has changed dramatically over the past three decades. Many countries have established, or substantially expanded, institutions that are clear alternatives to traditional universities — institutions I call, for lack of any better term, *tertiary colleges* for those with both academic and occupational programs, and *tertiary institutes* for those with occupational programs only. (Appendix 1 reviews the terminology that has been applied to this group of institutions, and argues why these terms might be appropriate.) These colleges and institutes are enormously varied, both within countries and among countries, and it's difficult to describe them as a group; almost nothing that can be said about these institutions is universally true. But they represent distinctive developments in tertiary education, with some remarkable benefits compared to universities – greater flexibility, greater access and equity, more overtly occupational and economic goals, a different approach to research and public service. It is therefore worth considering these institutions as a group because of their distinctive differences from universities. At the same time, the institutions suffer from some distinctive problems too, especially the challenge of finding a place in the sun — of finding a role and identity comparable to the higher-status university that has been established for much longer. So it's worth examining the variety of tertiary colleges and institutes, to learn more about the possibilities and the trade-offs involved in restructuring post-secondary education.

Tertiary colleges and institutes seem to have taken shape in distinct groupings, partly because of the sharing of practices among countries. In the German-speaking countries, Germany began its *Fachhochschulen* (FHS) in 1970-71; Austria's FHS are much more recent, dating from 1994, and German-speaking (In the French-speaking region the counterpart is the *haute école speicalisée* and in the Italian section the *sculoa universitaria professionale*.) has established FHS even more recently, with the first such institutions opening in 1997 — though they again developed by aggregating a number of advanced training schools. Two Scandinavian countries have developed technical institutes from earlier clusters of vocational schools: Norway with its state colleges, begun in 1994 and Finland with its polytechnics, established in 1991 by consolidating about 250 post-secondary vocational institutions; the Dutch hogscholen were also created out of early secondary schools in 1986. The Anglo-American countries all have tertiary colleges: community colleges in the U.S. and Canada, Further Education (FE) colleges in the U.K., and Technical and Further Education Colleges (TAFE) in Australia, as well as Institutes of Technology in Ireland — though the community colleges on one hand and FE and TAFE colleges on the other hand are quite different. France, with its *Institutes Universitaires de Technologie* (IUTs), seems to be quite different from any other countries, but in ways that prove to be especially interesting. And there are other examples in OECD countries too including the *hogscholen* in The Netherlands, the Institutes of Technology and some specialised colleges in Ireland, and the polytechnic sector in Portugal, which I omit in this report simply because of lack of time. These institutions are not always comparable, for reasons I clarify in Section 1, and their roles

and responsibilities vary systematically among countries, as Section 2 points out. But they are all clear alternatives to universities, and are by now well-established alternative routes into adult life and occupations.

The first remarkable aspect of many tertiary colleges and institutes is how new they are. In Finland, Norway, Switzerland, and Austria they are less than a decade old; the FHS in Germany, FE colleges in the UK and TAFE colleges in Australia are barely 30 years old. Even in countries where tertiary colleges were established relatively early, significant expansion has been quite recent: the oldest of these systems is that of the U.S. which is usually dated from 1918, but the real expansion of community colleges came only in the 1960s and 1970s. Similarly TAFE colleges have origins in vocational schools dating back to the beginning of the 20th century, though they took their present form in the 1970s. These are relatively recent institutions, then, with the advantages of the new — the lack of encrusted tradition in particular, the flexibility of youth — but also the problems of newness, particularly that of attracting students and finding an identity within tertiary education..

These institutions have developed in different ways in different countries, though again some commonalities explain their expansion. Perhaps the most important is the need to expand tertiary education, as the demand for places has grown since the 1960s; the emergence of these institutions is therefore part of the overall expansion of postsecondary education during the last three or four decades. But countries have had the opportunity simply to expand their universities rather than alternative institutions, which has happened in some countries (like Sweden and Italy). Therefore the decision to expand or create alternative institutions partly reflects a reaction against universities, which have been seen in many countries as too rigid, too academic in the pejorative sense of being distant from the world, too uninterested in economic development and occupational preparation, too elitist and inegalitarian, too unconcerned with the quality of teaching, too geographically remote for much of the population, and often too expensive. Thus the IUTs in France were partly rooted in criticisms of universities for being slow to respond to legislative mandates, rooted in old disciplines, and devoted to theoretical instruction in enormous lectures; the states colleges in Norway responded to a need to provide more occupational and less theoretical forms of tertiary education; the FHS in Germany were established in order to maintain the competitiveness of German industry, and therefore started with a commitment to relationships with employers that universities lacked. In addition, some countries instituted new institutions to upgrade the status of older vocational programs: FE colleges in the UK and TAFE colleges in Australia grew out of lower-level technical schools, the Finnish polytechnics were developed by merging and upgrading small and specialised secondary vocational programs, and the 26 Norwegian state colleges represent a merger of 98 smaller vocational colleges outside the university system. And of course market forces have played their own role in expansion: the increases in enrollments in many countries, including those like the U.S. and Canada where community colleges were much older, has been based on the greater proximity of such colleges to more of the population,

lower tuition levels in some countries, and a greater preferences on the part of some students for a shorter and more useful education.

Behind many of these causes of expansion lies a transformation in many advanced countries — partly real, partly imagined — related to the emergence of what some call the Knowledge Revolution, or what I call the Education Gospel.[1] The story goes something like this: The Knowledge Revolution (or the Information Society, or the high-tech revolution) is changing the nature of work, shifting away from occupations rooted in industrial production to occupations associated with knowledge and information. This transformation has both increased the skills required for new occupations and updated the three R's, driving work skills in the direction of "higher-order" or skills or "key" or "core" skills", or the "skills of the 21st century" including communications skills, problem-solving, and reasoning. Obtaining these skills normally requires formal schooling past the secondary level so that some tertiary education will be necessary for the jobs of the future, a position that OECD has labeled Tertiary Education for All.[2] Because technological change and sectoral shifts, individuals are more likely to find their skills becoming obsolete, and therefore lifelong learning is necessary to keep up with these changes. International competition has increased; and because no developed country wants to fall into the ranks of undeveloped countries relying on raw materials and unskilled labor, the need for greater levels of education and training over the lifespan is even more compelling to assure competitiveness and growth. But the good news of the Education Gospel is that an expanded and reformed education system can meet all these challenges. The pressures for countries to expand their systems of tertiary education, the demand by students, the greater attention to occupational rather than academic forms of postsecondary education, the interest in lifelong learning and the continued education of workers, and a somewhat greater interest in approaches to teaching are all rooted directly in this view. It's not surprising to find countries responding in somewhat different ways to the claims for a Knowledge Revolution, given their different histories and different institutions, but the fact of expansion in most countries and the shifts toward tertiary colleges and institutes are rooted in some common experiences.

In this monograph I examine the nature of these tertiary institutions, both describing the ways in which they vary as well as the common problems they face. This is not an attempt to be encyclopedic, to describe in great detail what these institutions do country by country. Instead, within the limitations of time and resources and without the benefit of a full Thematic Review,[3] I present a series of analytic issues, examining what these institutions do within their countries' larger systems of education and training, what special roles they play, and — inevitably — what dilemmas and trade-offs are created by the differentiation of tertiary education. While there is no comprehensive source of information about these institutions, there are basic descriptions available from other sources listed in Appendix 2.

In Section 2 I examine the basic structure of tertiary education in these countries, clarifying that the conventional distinction between unitary and binary systems of postsecondary education in many countries needs to recognize a tripartite structure. Section 3examines the different roles these tertiary colleges and institutes play, contrasting those with a unitary occupational role, those with binary roles in both academic and occupational education, and those with multiple (and often confusing) purposes. Section 4 analyzes the roles of institutes and colleges in larger systems of education and training, contrasted "isolated" versus "integrated" types of institutions. Section 5 examines several dimensions of funding, a crucial issue in every country since the expansion of tertiary education has put new pressures on budgets. Then, because these institutions have special potential for enhancing access to tertiary education, Section 6 examines the equity issues raised.

Because tertiary colleges and institutes are intended to be antidotes to the rigid teaching in universities, Section 7 then examines several teaching-related issues. Section 8 examines the benefits of these institutions, especially the economic benefits and complications in their interpretation. Section 9 then examines the special issues that arise in countries with federal governments, including the implications for serving local and regional interests when various pressures from international students flows and from the European Union are bringing global pressures to these institutions.

Section 10 returns to a question that OECD posed three decades ago, in a report called *Short-Cycle Higher Education: The Search for Identity* (1973). By and large tertiary institutes and colleges have developed a clearer identity in most countries than they had three decades ago, if only because most of them have expanded and become accepted members of tertiary education. But several uncertainties persist, partly because of the unending quest for institutional status. One of them is the question of whether these are real *educational institutions* or merely *trade schools*, as they seem to be in several countries. In addition, the nature of competition with universities in many ways structures many activities of colleges and institutes, and may ultimately determine what role they play in postsecondary education. Finally, Section 11 clarifies many of the trade-offs that countries face in thinking how to develop their tertiary sectors in the coming decades.

In this report I talk an institutional perspective — that is, I'm concerned with the institutions that provide alternative forms of tertiary education, and how they operate in distinctive ways from universities, which are better-established institutions. The alternative kind of analysis might be to focus on the courses or programs offered at the tertiary level, and now worry about institutions themselves; for example, Sweden provides mechanisms for providing a variety of tertiary occupational programs outside the universities, and has avoiding placing them in new institutions (as Norway and Finland have done). I take this perspective partly because the challenge has been to come up alternatives to universities, which are themselves institutions and not just agglomerations of courses; and in part because of belief that institutions can be richer

and broader providers of education than can providers of courses. I return to this issue in Section 10.1, in considering whether tertiary colleges and institutes have become true educational institutions or whether they are merely trade schools.

This monograph is part of a continuing interest of OECD in alternative forms of tertiary education. The first of these, in 1973, called these institutions forms of "short-cycle higher education" or the "non-university sector", and stressed that these institutions were still in search of a clear identity. It distinguished three approaches: multi-purpose institutions like the U.S. community colleges, specialized institutions with limited numbers of programs and loose or non-existent connections to universities; and the binary model typified by the U.K. with its sharp division between higher education in the universities and further education in the FE colleges. Another publication examined the students in short-cycle higher education (Cibois and Markiewicz-Lagneau, 1796), and noted that these institutions exist at different levels of their countries' higher education systems, an issue that is still true and that causes various kinds of confusion in comparing them across countries (see Section 2 below). Yet another study of "alternatives to universities" was conducted in the late 1980s noting the continued differentiation of higher education; it concluded that while alternatives to universities had been established in most OECD countries, competition with universities persisted and the question of finding a clear niche or identity within higher education was still an issue. In contrast, when OECD has examined tertiary education as a whole, tertiary colleges and institutes been practically ignored (e.g., OECD, 1998).

At the beginning of the 21st century the landscape of tertiary education is quite different than it was even 10 years ago. Many more countries have established tertiary colleges and institutes; many have targeted them for high rates of growth. The roles of tertiary colleges and institutes have continued to evolve, though the search for identity is still a crucial issue that I raise again in Section 10. It is certainly time to take stock of the current status of these increasingly-important institutions.

2. TERTIARY COLLEGES AND INSTITUTES IN THE STRUCTURE OF POST-SECONDARY EDUCATION

The most obvious way to describe the emergence of tertiary colleges and institutes has been to distinguish between countries with a unitary system of postsecondary education, with universities only, versus those with a binary system, with universities and some type of non-university institutions.[4] In such analyses, then, countries like Sweden and Denmark have unitary systems, though in fact Sweden has a large number of specialized providers and Denmark has a large number (about 120) of small vocational institutions that enroll about 70% of postsecondary students, and appears to be starting the process of consolidation that might lead to tertiary colleges

and therefore a binary system.[5] Germany, Austria, and Switzerland have binary systems with both universities and Fachhochschulen, Norway has state colleges and Finland has polytechnics alongside their universities, and are therefore binary, and the UK nominally has a binary system with universities and FE colleges, now that it has eliminated the distinction between universities and polytechnics. In theory, categorizing a country's system of higher education as binary automatically identifies the important non-university institutions, suggesting that they are comparable across countries with binary systems.

However, in many countries there is in effect a tri-partite system, with *at least* three levels distinguishing different types of institutions, and this makes comparisons more confusing.[6] In Great Britain, for example, the top tier of universities includes Oxbridge and the rest of the so-called Russell group of high-status institutions; a second tier of universities, of much lower status, research orientation, and selectivity, includes the less prestigious former universities plus the former polytechnics, many of which offer a broad range of occupational (or professional programs); and FE colleges constitute a third level, consciously labeled *further* education and not *higher* education to distinguish them from the universities. In Australia the Group of Eight universities are the elite, with non-elite universities below them, and then TAFE colleges at the third level. In the U.S., the first tier is composed of selective research universities, both public and private, most of which are academic at the undergraduate or first-degree level; a second tier of less-selective universities, with large numbers of occupational programs and lower completion rates; and a third tier of community colleges. Indeed, in some states — California is the clearest example — this three-tiered structure is embedded in legislation establishing these institutions and creating distinctions among them, while in other cases the different reputations of universities have created such distinctions. Germany is usually viewed as a country with a binary system; but the universities are a first tier, the FHS second tier, and then there is a third tier of *Berufsakademien* in 8 of the provinces or *Lander,* which provide tertiary-level education in the format of the dual system combining classroom learning and work-based learning. In addition the *Hohere Fachschulen* provide 3-4 year programs with an occupational focus for workers with some experience.

In all these cases the status hierarchy of institutions is established by the kinds of degrees offered, by the selectivity of the institutions, and by the resources per student, which are almost universally greater in first-tier universities than in second or third-tier institutions. Of course the boundaries between the different tiers vary. In the U.S. and the U.K. the boundary between first-tier and second-tier universities is fuzzy, and would be hotly disputed by many of the second-tier institutions. In the U.K. there are a number of institutions that provide higher education degrees as well as further education courses, and are therefore hybrid institutions; Canada has university community colleges that cooperate with local universities in providing bachelor's degrees. Australia has dual-sector universities that include universities and TAFE colleges co-located with shared infrastructure, and some U.S. universities are allowed to

grant 2-year degrees as community colleges do. But these complications and fuzzy boundaries should not obscure the conclusion that many countries have more than two tiers of tertiary institutions, complicating comparisons among them.

France also has a tri-partite system, though with an unusual status hierarchy. The *Grandes Ecoles* are the first tier, with selective admission and high spending per pupil, preparing students for the highest-level professions and public administration; the universities are nominally the second tier, because their degree is longer (three years) and clearly superior to the degree given by IUTs; and the IUTs constitute a third tier. There's also a fourth tier, the *Sections de Technicians Superieurs*, which give the *Brevet de Technician Superior* degree; these are essentially tertiary institutes operated by secondary systems, and in many ways their degrees are indistinguishable from DUTs. However, the IUTs have more spent per pupil than the universities, have selective admissions while the universities must take all students with admissions prerequisites the infamous *bac*), and have both better teaching conditions and a clearer and shorter route to completion; one could argue that the IUTs are really the second tier in the French system and the universities are third-tier institutions, with unselective admissions, enormous lecture classes, unclear patterns of advancement, long periods of study, and poor living conditions that have been the focus of many strikes. France illustrates that conventional status rankings, where the academic university is usually at the top, can become more complicated when occupational access, selectivity, and funding patterns diverge from conventional patterns.

Recognizing at least a tripartite structure for tertiary education explains why comparisons among tertiary colleges and institutes is often so difficult. Community colleges are Tier III institution in the U.S. and Canada, and they are therefore not directly comparable with the Tier II FHS in Germany, which aspire to be full universities; on the other hand the Tier II state colleges in Norway are more comparable to the Tier II FHS or the Tier II polytechnics in Finland, and have less in common with Tier III TAFE or FE colleges. Most of the less-selective universities in the U.S. and Great Britain are heavily occupational or professional, and therefore look like the occupationally-oriented FHS, Norwegian state colleges, and Finnish polytechnics, all of which are Tier II institutions. The heterogeneity and non-comparability of technical institutes and colleges is due in part to the fact that they occupy different places in their countries' status rankings, and that it is sometimes awkward and misleading to compare Tier II institutions with Tier III institutions, though on some issues they are quite similar. By the same token, comparison of Tier I and Tier II institutions is often difficult, even when they are all called "universities": second-tier state universities in the U.S. and many of the former polytechnics in the U.K. are not at all similar to elite research institutions like Harvard or Oxford, even though they like to think of themselves on the same plane. In the rest of this report, therefore, it's important to remember these differences in levels because they are related to many other differences among institutions. By the same token, a truly complete analysis of alternatives to universities should examine all Tier III (and Tier IV, and . . .) institutions, whereas this

selective report examines Tier II institutions in some countries but not the Tier III institutions (like the *Berufsakademien* in Germany, on which there is very little information).

If there's at least a tripartite structure of post-secondary education, this also explains why the ISCED classifications are often awkward. ISCED is an effort to categorize courses rather than institutions; it divides category 5, for postsecondary courses, into 5A, for longer and more academically-oriented courses like those in universities, and 5B for shorter and more occupational courses. But the *Fachhochschulen* courses, which are shorter and certainly more occupationally-oriented compared to German and Austrian Universities, are assigned to 5A with universities, while the *Fachschulen* and *Berufsakamien* are assigned to 5B; in the U.S. the academically-oriented Associate degree (of two years duration) is assigned to 5A, along with four-year baccalaureate degrees and master's degrees requiring another year or two; but vocationally-oriented Associate degrees are assigned to 5B. So programs intended to be alternatives to universities are sometimes included with universities and sometimes put in category 5B, and similar programs in a single institution can be allocated to different categories depending on whether they are academic of occupational. Overall, then, the ISCED classifications are difficult to use for purposes of describing tertiary colleges and institutes, and any data taken from these classifications — for example, the earning data cited in Table 4 below – are hard to interpret.

Another way to understand the role of tertiary colleges and institutes is to examine their relative importance in tertiary education. While there are many technical difficulties in doing so,[7] it's clear that the institutions enroll substantial proportions of students in many countries. In their comparative analysis of 9 European countries, Huisman and Kaiser (2001) have compiled some useful data on the extent of the non-university sector presented in Table 1, for data as of 1996. While the newest system in Austria was still very small then, in other countries the non-university components range from about one quarter of students to 70% in Denmark, where non-university students are enrolled in a large number of small specialized institutions.

Table 1: Student population in non-university institutions, headcounts, 1996

Austria	FHS	2%
Denmark	120 small institutions	70%
Finland	Polytechnics	24%
Flanders		62%
FranceIUTs	42%	
Germany	FHS	24%
Netherlands	Hogescholen	63%

Table 2 presents a variety of estimates from different sources of data for the proportion of students in tertiary colleges and institutes. Again, because of technical

problems these are not strictly comparable, but they clarify that enrollments in these institutions are significant in most of these countries, approaching one half of students in some (Finland, the U.S.), and now a majority of new students in Norway.

Table 2 Enrollments in Tertiary Colleges and Institutes

Austria	FHS, proportion of students 2002 (target = 1/3 of beginning students)	8.4%	
Finland	Polytechnics, proportion of tertiary enrollments, 2002		43%
	Polytechnics, proportion of new enrolments, 1999		42%
France	IUTs, proportion of teriary enrollments	8.4%	
	IUTs, proportion of first-cycle students		19.4%
Germany	FHS, proportion of tertiary enrollments (target = 40%)	24%	
Norway	State colleges, proportion of enrollments	47%	
	State colleges, proportion of new admissions		58%
Switzerland	FHS enrolments as a proportion of all tertiary education, winter 2000		20%
U.S.	Community colleges, % of undergraduate enrollments		37%
	Community colleges, % of new enrolments, 1996		40%

Furthermore, several of these countries have targets for further enrollments in tertiary colleges. Germany hopes to have 40% of enrollments in FHS, though the universities have opposed this; Austria hopes to provide places for 1/3 of entering students, and Finland plans to expand all of tertiary education to admit 70% of students age 19 to 21, all of which will take place in the FHS rather than the universities. Great Britain has a target of having 50% of the relevant age group enrolled in tertiary education by 2010, and many observers think a great deal of this growth - if it materializes – will come in FE colleges. A cautious prediction might be that tertiary colleges will continue to increase as a fraction of post-secondary education, though the high growth rates that emerge within the last decade probably cannot be sustained in subsequent years. (For example, the new Swiss FHS increased by 400% between 1997/98 and 2000/01, a growth rate that surely cannot be sustained.) In sheer size alone, tertiary institutes and colleges now occupy an important place in postsecondary education.

3. THE PURPOSES OF TERTIARY COLLEGES AND INSTITUTES

Another dimension on which tertiary colleges and institutes differ is the purposes they serve, ranging from relatively *unitary* institutions providing occupational education to *binary* institutions providing both occupational programs and academic

programs providing access to higher level of the with distinct possibilities and complications of their own. Often institutions vary within as well as among countries. Particularly when tertiary colleges serve multiple functions, the non-university sector seems to have more purposes than the university does, despite the image of the "multiversity" coined by Clark Kerr (2001), denoting a university with diverse purposes in teaching, research, and diverse forms of public service.

In the purposes these institutions serve, their historical originals continue to have substantial effects. The tertiary institutes in Norway, Finland, and the Netherlands were created by consolidating many smaller specialized vocational institutions; not surprisingly they are relatively unitary institutions concentrating on occupational preparation. The FE and TAFE colleges in the U.K. and Australia also emerged from earlier vocational schools, and they continue to be heavily vocational; indeed, as I will argue in Section 10, they often look like trade schools. However, in the U.S. and Canada community colleges emerged first as ways of completing the first two years of a university degree, concentrating on academic prerequisites; and their origins in academic curricula live on in the importance of the transfer function, the purpose of allowing students to transfer to a university after about two years of study.

3.1 Program Offerings: Unitary, Binary, and Multiple-Purpose Institutions

The state colleges in Norway and the Finnish polytechnics are good examples of unitary functions in tertiary institutes. They provide a range of occupational programs and very little else; they do not offer extensive programs in academic subjects, and the general expectation is that students will go into employment when they have completed a program. The same is true of the FHS in Germany, where most students go right into employment, and the FHS in Switzerland.

Binary institutions are those that provide both occupational programs and academic programs. Many of the community colleges in the U.S. and Canada are binary, stressing both transfer to the university through academic programs as well as preparation for the labor market through occupational degrees, but with few other programs (in contrast to those with multiple missions). In addition, the FE colleges in the U.K. have become binary institutions in different ways: while they stress courses to prepare for many different occupational qualifications, at all different levels, they have increasingly provided academic programs as well including courses to allow students to take GCSE exams and A-level exams. They have also created articulation agreements with some universities, particularly with the former polytechnics, so they also serve the transfer function to the university.

The case of France is an interesting variant. While almost all their programs are occupationally-oriented, France has a system where individuals take a series of exams

after the second year (the DEUG), third year (the *license*), and fourth years of post-secondary education (the *maitrise*), allowing individuals to move up this ladder no matter whether they are in universities or IUTs. While the IUTs were initially envisioned as leading to employment, in fact many students — as many as 60% — use them to gain entry to the university taking the first two years in the higher-quality IUTs and then switching into the university. So what was intended to be an institution with a unitary purpose has become, through student movement, one with binary purposes serving the goals of both labor market preparation and entry into the more academic university.

However, most community colleges in Canada and the U.S. are better described as institutions with multiple purposes, and indeed the discussion of which purposes of missions should be prominent is a endless subject of debate (Bailey and Averianova, 1998). In addition to academic programs preparing students for the university, and occupational programs preparing for the workplace, these institutions typically include:

(1) evening and weekend classes suitable for working adults, thereby serving the purposes of upgrade training and lifelong learning. These offerings often serve the purposes of older workers wanting to change occupations as well. However, institutions that do not provide flexible hours or evening courses are usually inaccessible to older workers and therefore do not serve the purpose of lifelong learning; for example, the FHS in Germany and the state colleges in Norway generally have standard academic schedules, and relatively few of their students are older.

(2) customized training for the employees of specific firms, a purpose often referred to as economic development;

(3) non-credit programs of courses related to hobbies, the arts, sports, and other non-vocational interests, thereby overlapping with offerings usually considered adult education;

(4) literacy programs for low-literacy adults. In some cases, including community colleges in both Canada and the U.S., colleges have set up community-based sites intended to feel more like community-based or non-profit organizations rather than educational institutions, and here too tertiary colleges have taken on some of the roles of adult education.

(5) special programs for the long-term unemployed, or welfare recipients, or mothers returning to the workplace after rearing their children, thereby providing "second chance" programs for different categories of individual. Such programs are sometimes funded by Labour Market Programmes or welfare agencies.

Yet another potential purpose or mission in these, one that is widely recognized in both the U.S. and in Australia, is that of providing information and guidance to students about their career and educational choices. Most tertiary institutes and colleges assume that students know what occupational (or academic) area they want to study since students come for specific programs and have presumably already made up their minds to become a nurse, or electronics technicians, or business manager. But — particularly in countries with mediocre systems of career information and guidance at

the secondary level — students considering their postsecondary options or older workers seeking retraining for new occupations may not know what occupation they want to enter, or may not know about the educational requirements for different occupations. In such cases students — sometimes called "experimenters" or simply "undecided" students in the U.S. — may begin taking courses in a community colleges or TAFE colleges in order to learn more about their potential interests. This may not be an efficient or effective way of learning about education and career options, and so there have been some experiments with more systematic forms of information and counseling — including colleges in the U.S. that have created special programs, or a pilot program in Burgenland, Austria, that provides information and counseling for a wide range of adult education without being "captive" of any one institutions.[8] Overall, however, such special efforts to serve the career needs of "experimenters" should be recognized as one of the potential purposes of tertiary colleges.

The development of multiple purposes of missions is often related to the agility and the entrepreneurial drive of tertiary colleges, particularly compared to universities that are often accused of being slow to change and unwilling to venture into new programs. In extreme cases, as in the U.S., community colleges have even created independent divisions — sometimes non-credit divisions providing courses that do not count toward a regular diploma, sometimes non-profit divisions intended to provide self-supporting courses for hobbyists or the employees of specific firms — if the rules and regulations of the tertiary colleges or its faculty committees are too slow or discouraging toward innovation. There are costs to having multiple functions, as I will point out in Section III.3, but it does expand the range and scope of tertiary institutions beyond conventional academic and occupational preparation.

3.2 The Level of Occupational Preparation

All tertiary institutes and colleges reviewed in this report provide extensive amounts of occupational preparation. Even the Canadian and U.S. community colleges that stress transfer to universities still have important occupational programs. Indeed, many of these institutions were established partly to provide tertiary-level occupational preparation in contrast to the academic and theoretical preparation of conventional universities.

However, the level of occupational preparation differs in distinctive ways among these institutions. At one end, the TAFE colleges in Australia provide a large number of courses in what I will call "traditional" vocational education – in building trades, the crafts, in clerical work and retail sales, in car and engine repair, in machining, metalwork, electrical (not electronics) applications, and relatively low-level business and IT applications suitable for clerks. The same is true of FE colleges in Britain, especially for NVQ Level 1 and 2 qualifications. These are the occupations that arose soon after 1900; they are definitely not part of the new occupations associated with the Knowledge Revolution, though many of them have been transformed by computer

applications. Similarly FE colleges in Britain and community colleges in the U.S. and Canada provide some of these programs. Preparation for such occupations is provided in some countries (like Germany, Austria, and Switzerland) in apprenticeships and in other countries in secondary schools. Because such occupations tend not to have any university equivalent, it's difficult for students to transfer from such programs into universities. Furthermore, the pay levels of such occupations are relatively low, and employment conditions are unstable.

In contrast, the FHS in Germany and Austria provide 3 – 4 year degrees, as do the state colleges in Norway and the polytechnics in Finland. These focus on a different set of occupations: they tend to be dominated by business, technology and communications including higher levels of IT; health occupations and sometimes social services, and in some cases public administration. These are occupations that in some way or another can be associated with the Knowledge Revolution: they require substantial academic competencies including sophisticated reading and writing, sometimes substantial math, sometimes science;. In many cases the curriculum reflects the importance f such apparently academic subjects; for example, the curriculum for computer engineering in the Norwegian state colleges includes basic science, academic and applied math, and two business courses as well as computer-related courses; many occupational programs in the U.S. require academic subjects, either in their academic forms or in applied version (like math for technicians or business English). These occupational areas are not predominantly manual labor, as many traditional vocational subjects are; and they benefit from higher wage rates and more stable employment They all have equivalent programs at the university level, in both bachelor's and master's programs, so that transfer appears more natural.

In some cases – TAFE and U.S. community colleges are good examples – both "traditional" and "modern" occupational education appear in the same institution, sometimes even in the same division of a college. In the U.S. case, the image of vocational education in community colleges has been dominated by older, traditional, low-status vocational education, whereas in fact about 85% of occupational enrollments are in "modern" occupational areas. Similarly, the enrollments in "modern" occupations in TAFE colleges have apparently been growing substantially, so these institutions may be transformed over the next few years. But institutions rooted in traditional vocational education may suffer from the low status associated with vocational education. If the image of these colleges could catch up with the reality of what they provide, it might give them somewhat higher status within higher education.

The differences in occupational offering in different tertiary institutions create still other complications in comparing them across countries. Many programs in TAFE and FE colleges aim at much lower levels of the occupational hierarchy than do FHS or state colleges, and courses labeled "business" or "IT" may in practice be quite different in the level of sophistication and in the academic competencies necessary. In a world where the Knowledge Revolution is slowly changing the occupational structure, it's not

surprising to see occupational education being transformed too, but it remains crucial to understand precisely what occupations are the targets of different forms of occupational education.

3.3 Serving Local Communities

One of the clear purposes of tertiary colleges and institutes, in every country that has them, is that they are smaller and much more numerous than universities. They are therefore spread throughout a country and provide closer access to much of the population than do universities. Table 3 provides some typical numbers in different countries, clarifying this point for most countries, though the new FHS in Austria and Switzerland are still not particularly numerous. Indeed, in cases where these institutions have been recently established, part of the point has been to create regional education centers, including ones located in remote and rural areas.

At the same time the institutions that have been created have been intended to create comprehensive rather than specialized institutions, with greater economies of scale than the institutions they replaced. Thus the 29 Finnish polytechnics were created from about 250 vocational institutions; the 26 state colleges in Norway were established by merging 98 specialized colleges; and the

Table 3 Numbers of universities and tertiary colleges

Austria	18 universities, 19 FHS
France	86 universities, 101 IUTs and 22 specialized IUTs
Finland	10 comprehensive universities, 10 specialized universities, 30 polytechnics, 1 specialized polytechnics
Norway:	4 universities, 26 state colleges
Switzerland	10 universities, 7 FHS (or the equivalent), 2 institutes of technology
U.S.	622 public universities, 1828 private universities, 1076 public community colleges

There prove to be many consequences of the geographical proximity of tertiary colleges to much of the population and of the public mandate to serve local communities. One is that access is easier and cheaper, and therefore individuals who would not be able to attend a far-away university – including lower-income students – are more likely to attend a nearby tertiary college, as issue I will return to in Section 6 on equity. In addition, the research and public service that these institutions carry out is generally focused on local economic development and community needs. Under the best conditions – and particularly in rural areas and middle-sized cities where there are not many other educational institutions - these tertiary colleges become dominant

centers within their communities, with high profiles and a variety of services for many different groups.

3.4 Research and Public Service in Non-University Institutions

One of the distinguishing features of universities is their research function, and tertiary colleges and institutes sometime suffer in comparison because they supposedly lack any research function. However, in many countries these institutions have been given or have taken on responsibilities for local and regional research. For example, the Norwegian state colleges The Finnish Polytechnics carry out R&D supporting polytechnic education itself as well as the working life of the region; part of the purpose of their formation, from a number of smaller institutions without the capacity to carry out research, was to increased regional expertise. In Germany, one intent of the FHS was to consolidate research about the region, and they have responsibility for counseling local businesses and working with public administration,' often student paper written for the final degree are written in conjunction with local companies. In France the IUTs have the right to carry out scientific and technological research, and the most common activity seems to be technical assistance to enterprises. The act establishing state colleges in Norway specifically provided that they should engage in research, particularly connected to practice within specific occupational fields or to problems in their regions.

Similarly, in the U.S. and Canada, community colleges carry out a variety of activities intended to serve the local community. As in other countries, many of these can be grouped under the heading of economic development, or efforts to make the local economy thrive; this usually include advice to local firms (especially SMEs) about new technologies and practices, often in small business development center; playing a role in convening industry clusters, to identify the education and technology needs of local employers clustered in particular sectors; serving a convening role in bringing together other groups of local employers around common needs; environmental scanning, the practice of "scanning" or surveying the business environment for new developments and technologies; and helping attract new employers by providing education targeted to their employment needs. In addition, another set of activities, sometimes called or community development or simply public service, can include efforts to participate in local task forces on community issues, providing a bridging mechanism to elementary-secondary education, and providing leadership on issues around disadvantaged students.[9]

However, it's difficult to find any information about the extent of these activities. One exception is the examination by Kyvik and Skodvin (2003) of research and development in Norway's state colleges. They determined that about 20% of faculty time was spent on R&D, most of it (79%) on applied research and development rather than basic research. Their work also clarified the dilemmas that such research creates, particularly fears that R&D will undermine teaching, the resentment of universities

toward other institutions usurping their research role, the tensions over resources, and the debate over whether R&D should be a universal requirement or a voluntary activity for faculty. Many of these issues involve dimension of identity taken up in Section 10.2, particularly the question of whether tertiary institutes will become more like universities with research requirements for faculty or will be clear alternatives in which teaching is given higher priority than research.

Other than examining faculty time, determining what even one tertiary college does is difficult because activities may be undertaken by individual instructors, and because it is often difficult to assess the magnitude or impact of public service.[10] Many tertiary institutes suffer from small size and diseconomies of scale, and therefore do not have the resources to develop much local research; under these circumstances it requires highly entrepreneurial efforts on the part of institutes to find the resources for such efforts. And when such entrepreneurial initiatives is necessary, then it's often the case that such efforts are uneven and idiosyncratic; as the report on Swiss tertiary education noted, FHS engagement in applied research and research transfer remains "uneven", though these institutions aim to increase their local R&D roles. In general, then, it seems to be difficult for countries either to understand what local research and public service are being carried out by tertiary colleges and institutes, or to ensure that these functions are carried out in all institutions.

The emergence of research and public service in tertiary colleges and institutes is a good example of a broader concept of research articulated by Ernest Boyer (1990), and echoed in Great Britain by Pratt (1997). Boyer urged post-secondary institutions to move beyond the scholarship of discovery, which dominates the high-status research university, to include the *scholarship of integration* including synthetic and multi-disciplinary work; the *scholarship of application* including service to communities of practice; and the *scholarship of teaching*, in which professors carry out research on their own teaching. This effort to broaden the conception of research would be beneficial to all Tier II and Tier III institutions, whether they are second-tier universities (as in the U.S. and the U.K., which normally don't carry out much conventional research) or tertiary colleges. Tertiary colleges and institutes are particularly well-suited to the scholarship of application, including technology transfer, and the scholarship of teaching. If the canons of what constitutes serious research were broadened, then the status gulf between the high-status research universities and tertiary colleges and institutes might become smaller.

3.5 The Trade-offs of Multiple Purposes

As tertiary institutes, focusing on occupational preparation, move toward becoming tertiary colleges with multiple purposes, they obviously serve a broader range of students and of community functions. In some communities, particularly rural or isolated communities or even mid-sized cities, such colleges can become the dominant educational institution in the area, "the only game in town", providing a

wide variety of pre-employment education, lifelong learning, adult education, labour market programs, and services to employers. The community colleges in Canada and the U.S. frequently follow this pattern, as do state colleges in Norway, particularly in isolated towns, and sometimes the polytechnics in Finland.

However, the development of multiple purposes comes at some cost as well. One is simply that the image of institutions become diffuse and difficult to understand for the publics who might be interested — students and employers, certainly, but policy-makers as well. They become more like a department store or shopping mall, with overwhelming numbers of offerings that are difficult to understand and to choose from. As one example, Bailey (2001) has complained that the history of further education colleges in Britain has never developed a clear purposes, focus, or status for these institutions. Another consequence is simply that, as the number of potential purposes expands, different colleges can choose to emphasize one purpose over another, and so colleges start to vary greatly – and those that are especially entrepreneurial may look quite different than those that are not, and that stick to a unitary or binary mission. This is particularly a problem with variation among state or provinces, for countries with a federal system; for example, the community colleges and FE colleges in the U.S., Canada, and Australia are creations of states and provinces, and vary substantially within the country in their emphasis on academic and transfer purposes versus occupational purposes. While such patterns may be responsive to local demand, they may also reflect institutional priorities that leave certain groups of students unserved.

Another cost is simply that the image of the institutions may become too diffuse as they do too many things for different members of the local community. They may become confusing both to students, who may be unaware of a variety of offerings, and to policy-makers who cannot understand that the institution does. The first of these may be resolved through transitional mechanisms for new and prospective students, providing them information about what the institution does, as well as academic counseling that concentrates on helping students move through these tertiary institutions Unfortunately, guidance and counseling is usually relatively weak at the tertiary level (OECD, 2003), so that many students may still be unaware of all the options within a tertiary college. In the best cases tertiary colleges have built “bridges” or articulation mechanisms among different offerings so that students can move from one to another; for example, the community colleges in British Columbia and New Brunswick that established literacy programs created mechanisms of transferring low-literacy adults into the regular programs of the colleges as the life conditions of students permitted; some U.S. community colleges have created articulation mechanisms between their non-credit programs, which are lower-cost and more accessible, and their credit programs; and some community colleges in the U.,S. have provided labour market programs and then made it possible for students to count these programs toward subsequent degrees.[11] These are ways of connecting the different programs and purposes of a tertiary college.

A final potential cost of having many purposes or missions is that colleges may try to do too many things and therefore do none of them well. The endless debate in the U.S. about the missions of community colleges reflects in part an anxiety that colleges would do better if they concentrated their institutional resources (including administrative time) on a small number of "traditional" teaching functions, rather than adding on lifelong learning, economic development, and other purposes whether they have no experience or comparative advantage. In some cases state legislation restricts what community colleges can do; for example, North Carolina has restricted the number of transfer students in order to keep its colleges focus on occupational preparation, and Iowa has prevented economic development funds for being used with certain types of employers. But while legislative restriction is a policy option in keeping these institutions more narrowly focused, it also serves to restrict the entrepreneurial energy that is often seen as a defining characteristic of tertiary colleges.

4. THE ROLES OF TERTIARY COLLEGES AND INSTITUTES IN NATIONAL SYSTEMS OF EDUCATION AND TRAINING

Tertiary institutes and colleges are, of course, part of larger systems of education and training. They sometimes serve clearly-defined roles within that system; for example, many of them were created recently — as in Norway, Finland, Switzerland, Austria, and France — to provide more vocationally-oriented tertiary education than universities could provide, as well as greater geographic coverage and equity. However, the question then arises of precisely what the links are between these tertiary colleges and institutes and other institutions of education and training, and then what these linkages should be.

We can categorize tertiary colleges and institutes as relatively *segregated* from the rest of education and training or relatively *integrated* — though "integrated" proves to mean many different things. No country has tertiary institutes that are completely segregated though TAFE colleges in Australia probably come the closest: their links to universities are weak in most cases, and they tend to operate simply by offering rosters of courses that students choose rather than creating institution linkages (as I will illustrate further in Section 10.1). In addition, there are individual community colleges in the U.S. that are quite segregated from all other institutions: they provide their own courses and degrees but do not interact much with either universities, local secondary schools, or labour market programs. The isolated location of many state colleges and polytechnics in Norway and Finland also raises an obvious question about whether some of these institutions are organizationally as well as geographically isolated.

However, most tertiary colleges and institutes are integrated to some extent. Probably the most important linkage involves the ties with universities. In the U.S. and

Canada, where these institutions were created in part so that universities would have to do less "lower level" work in the first two years, the transfer function is symbolically important for tying community colleges to *higher* education. However, there are frequent complaints that transfer rates are too low, and a great deal of controversy about whether universities are to blame because of their reluctance to accept community college students or whether the colleges are to blame for not preparing students adequately. Many colleges have a vast number of articulation agreements with universities and special programs to facilitate transfer, and in some states and provinces there are efforts to increase transfer rates through accountability mechanisms that penalize colleges in some way if their transfer rates are too low.

In a somewhat different pattern, the IUTs were created in order to provide occupational preparation at the tertiary level, not transfer to the university. However, a large fraction of students (as many as 60%) who complete the two-year program then go on to the University because of the higher status and employment benefits of its degree; the fact that IUTs are linked with particularly universities, and that they are indeed called Institutes *Universitaires*, facilitates such movement. At the other end of the spectrum there's a clear separation in policy between *higher* education and *further* education as two distinct sectors with few links between them, though in practice local FE colleges create articulation arrangements with local universities, as in the U.S. and Canada. In a few countries — especially the German-speaking countries with FHS — the tertiary colleges are so close in duration and access to employment opportunities that there little point in trying to transfer.

Overall it's difficult to know what the magnitude of transfer to universities is, partly because few countries have the kinds of longitudinal data sets that permit the calculation of transfer rates. A judicious interpretation of the debates is that, while almost all countries allow transfer in some way, in practice there may be various barriers to transfer that are sometimes institutional, sometimes personal (for example, when students cannot afford to stay in school longer, or have performed poorly), and sometimes locational (for example, when tertiary colleges are located a considerable distance from universities). So transfer rates surely vary substantially within as well as among countries and are undesirably low in some countries,[12] and the complexity of causal mechanisms merits more sustained attention.

A second category of linkage involves connections to secondary schools. Most tertiary colleges seem not to be particularly concerned about secondary education; they accept students who are qualified, and qualification is assumed to be sufficient for students to do well in the institute. Almost all of these institutions can be entered as a matter of right by students who have passed the necessary exams, like the Reifeprufung or Berufreifeprufung in Austria or Germany; only the French IUTs have selective admissions.

However, an interesting situation has developed in the United States, where community colleges have started to become concerned about the competence of secondary students coming to them and requiring a great deal of remedial coursework before they can start "college-level" work. In response, colleges have created an amazing variety of articulation mechanisms with secondary schools. Some of these are intended to improve the quality of preparation; for example some colleges work with secondary instructors to upgrade the level of teaching, and some colleges administer diagnostic tests to secondary students to alert them to deficiencies in basic academic skills. In other cases community colleges provide secondary school students with higher-quality opportunities. In some cases secondary students can enroll in community colleges courses, and in other situations colleges have created high schools on their own campuses. In general these mechanisms between community colleges and secondary schools are welcome because they can smooth the transition between the two levels, something that seems difficult in many countries. However, some of these initiatives are worrisome because they have emerged when secondary schools are the failing badly, and they are an indication of how poor some secondary schooling is in the U.S., especially in cities. One can imagine similar situations arising in other countries with low-quality secondary education, though so far the role of tertiary colleges as part of school reform appears limited to the U.S.

In other cases the relations between secondary schools and tertiary colleges are those of competition rather than cooperation. In Great Britain, where competition in the provision of post-16 education is a fundament of national policy, the FE colleges in essence compete with secondary schools to provide preparation for GCSE (lower secondary) and A-level (upper secondary) exams as well as other vocational qualifications. One of the advantages of FE colleges over secondary school — as is also true for community colleges in the U.S. — is that they appear to be more "adult" institutions than are schools, and therefore more attractive to older secondary students. Under these conditions there's little possibility of cooperative mechanisms emerging to smooth the transition between secondary and tertiary education. Currently FE colleges enroll a slight majority (51.5%) of 16-year-olds who are still in formal schooling, so that these institutions are playing a substantial" secondary" role — in addition to offering many of the same courses to older students in a second-chance role.

A third area of potential linkages involves labour market programs. Most countries have some form of short-term job training as part of Active Labour Market Policies,[13] intended to get the unemployed back to work quickly. They are often similar to some of the courses offered in tertiary institutes; for example, labour market programs often offer preparation in computer skills and information technology, in basic business practices, and in lower-level health occupations just as technical institutes do. In the U.S., labour market programs have in the past often subcontracted with community colleges to provide some of their training; and in a few cases colleges have even operated the local labour market program. Potentially these are mechanisms to create articulation mechanisms and transfer between the short, non-degree labour

market programs — few of which are sufficient to guarantee stable employment over the long run – and the longer degree programs of tertiary institutes. In practices these kinds of linkages have been comparatively rare, and national policy has now changed to discourage them even more.[14] In other countries, this possibility seems even more remote. In Austria, for example, the FHS concentrate on their three-year programs, and rarely bid to provide short labour market programs; the French IUTs are invested in become as much like universities as possible, and therefore focus their energies on emulating universities rather than the short programs with disadvantaged clients typical of labour market programs. When I turn to the issues of status competition in Section 10, it will become even clearer why so few tertiary institutes and colleges have worked cooperatively with labour market programs.

A fourth possible linkage is to the offerings usually designated as adult education. Here tertiary colleges have been more active, particularly in lifelong learning defined as the education of older individuals. The FHS in Austria, for example, have created evening programs intended for working students, where the average age is 33. FE, TAFE, and community colleges in the English-speaking countries all provide large amounts of evening and weekend courses targeted on working adults, and are among the largest providers of this form of adult education. (In contrast, the tertiary institutes in Norway, Finland, and the other German-speaking countries tend to operate on conventional schedules, with fewer older students.) Some community colleges in Canada have established community-based centers that provide adult education, except that they can then be linked to other courses at the colleges; some U.S. community colleges have done the same in community-based non-credit divisions. In general, however, tertiary colleges are simply one of many providers of adult education, often operating in competition with other providers of adult education. This is particularly the case in countries like the U.K. and Australia, where public policy has intentionally used competition among institutions as one of several market-like mechanisms to enhance the quality of education (at least in theory); it is less true in countries like Austria which have avoided competition, where the long-term offerings of the FHS and the short-term offerings of other adult providers tend not to be in direct competition.

When tertiary colleges create linkages among other education and training institutions, one of their advantages is creating pathways or bridges among different programs or institutions. For example, an individual in a short labour market programme can transfer into the mainstream of tertiary education; someone needing basic skills instruction can continue in occupational programs.

The issue of segregated versus integrated provision in tertiary colleges and institutes is due in part to the behavior of students, responding to the incentives to attend different types of programs. It is also affected substantially by public policies, particularly those that link (or fail to link) tertiary colleges with universities and that promote or hinder competition with adult education. Finally, this issues is related to the

entrepreneurial nature of these institutions, as outlined in Section III. Where colleges are especially entrepreneurial, they have often worked to create ties with other institutions, contributing to their image as crucial to their community as a whole.

5. THE MULTIPLE DILEMMAS OF FUNDING

The expansion of tertiary education, since the early 1970s and certainly since the 1990s, has placed new strains on funding in many countries. If the fraction of the university-age cohort increases, as part of the demands of the Knowledge Revolution or the Education Gospel, then funding demands per capita increase. If in addition the funding per student increases in real (inflation-adjusted) terms — because, for example, secondary programs are upgraded into tertiary programs, as with the state colleges in Norway and the polytechnics in Finland — then there is a second source of increasing funding. While the increases in funding due to the establishment and expansion of tertiary colleges over the past thirty years is not known with any precision, there is no question that continued increases in enrollments, and the prospects of Tertiary Education for All (OECD, 1998), will strain national budgets. In turn, three other dilemmas follow: the question of funding per student in tertiary colleges versus universities; the costs to students themselves, through tuition and fees; and the more general question of the sources of funding.

5.1 Levels of Funding in Tertiary Colleges

In most countries, tertiary colleges are, among other goals, ways of expanding tertiary education at lower cost than expanding universities. In most countries, costs per student are lower in tertiary colleges. For example, in Norway spending per full time student was 64,356 kronor in 1996 in state colleges compared to 78,479 kronor in the 4 universities. In Finland universities spend about 6400 euros per students compared to 5400 euros in polytechnics. In the U.S., which typically has greater inequalities than other countries, spending per full-time equivalent student is $7,665 in community colleges, compared to $11,345 in public universities granting master's degrees (mostly second-tier universities), $17,780 in public doctoral institutions, and $32,512 in research universities. Differentials in spending are also quite wide in the U.K. since some elite universities have substantial endowments to supplement public funding while others do not, and the FE colleges have been particularly squeezed in the past few years. France is an exception since the IUTs spent 8790 euros per student in 2001while the universities spent about 25% less, about 6590; this is one of several factors making the status rankings of IUTs and universities less clear than it is in other countries.

It's worth asking what accounts for the differences in spending per pupil in tertiary colleges versus universities. Unfortunately, there's been very little attention to this dimension of tertiary education. One difference includes the costs associated with

research, which are difficult to disentangle from other teaching-related costs. Another is the costs associated with faculty, which are typically lower in tertiary colleges, potentially contributing to lower-quality faculty and more turnover. Student services are also funded at lower levels, at least in the Anglo-American countries; this may not be true in the German-speaking countries, where the *Fachhochschulen* has status equivalent to universities, nor in France with the higher spending levels of IUTs. Buildings, libraries, science labs, computer labs, and other facilities may be less adequate and more crowded, and all of these may contribute to tertiary colleges being more like *trade schools* and less like *educational institutions*, a distinction I outline in Section 10.1. Of course there are some differences among countries according to policy: the efforts of FHS in Germany to be equivalent to universities has led them to pressure for equal pay and working conditions for their faculty; students in IUTs always have access to the facilities of the universities to which they are affiliated. But

However, the resource issues may be more complex than the simple spending levels imply. In France, for example, the better teaching conditions in IUTs mean that they are often preferred by students over the more crowded universities; in the U.S., smaller classes in community colleges compared to universities and faculty dedicated to teaching rather than research make these colleges preferable to universities, at least for students wanting smaller learning environments. The location of tertiary colleges closer to students provides a locational "resource" — proximity to home and family — that helps keep the living costs associated with tertiary education lower. So the connections between expenditures levels and quality — or student perceptions of quality — may not be particularly direct,[15] and tertiary colleges may have some advantages that outweigh the differences in spending.

From a policy perspective, the differential in spending between tertiary colleges and universities means that expanding post-secondary education through tertiary colleges is cheaper than expansion in universities, and from the perspective of simply counting enrollments, it is therefore more effective. However, from the perspective of students, lower levels of funding mean institutions with fewer students services, potentially lower-quality faculty and more turnover, less adequate physical facilities, and the like. On these dimensions the interests of policy-makers and the interests of students in higher-quality institutions are opposed to one another: if tertiary colleges are established precisely because they are cheaper than universities, then policy-makers will surely resist efforts to improve the quality and the spending per pupil of tertiary colleges.

The differentials in resources are part of what I have termed the great *structure of inequality* in tertiary education, that in turn has resulted from the differentiation of tertiary institutions. In general, the differentiation of tertiary education has been seen as a good thing, providing alternative forms for students wanting different routes into employment; the recent creation of state colleges in Norway, polytechnics in Finland, and FHS in Switzerland and Austria illustrate the appeal of differentiation. But

differentiation often — though not inevitably — leads to a hierarchy of institutions in which some (the new colleges) receive fewer resources than the established universities, and these inequalities in funding are generally replicated whenever there is additional differentiation, as in the three-tiered systems of post-secondary education outlined in Section 2 above. In turn, this has serious consequences for the equity effects of differentiation, as I will clarify in Section VI.

5.2 The Costs to Students

The issue of costs to students, through tuition and fees, tends to divide into three different groups. In the community colleges in the U.S. and Canada, the tuition costs of community colleges are much lower than those of universities; while there is considerable variation among states and provinces, university tuitions are typically several thousand dollars while college tuitions are under one thousand. Similarly in Australia, TAFE colleges cost a great deal than universities; this means that students entering a baccalaureate degree through TAFE end up paying less overall than those who enter the university. These cost differentials help explain the differences in growth rates among these institutions.

In other countries, however, such tuition differentials do not exist — in Scandinavian countries because tertiary education has been free for all students, and in Germany, Austria, and Switzerland because the costs of FHS and universities are the same, and relatively modest compared to tuition costs in countries like the U.S. In such cases, of course, tuition differentials cannot explain enrollment patterns of growth rates.

However, many countries are re-thinking — or are starting to rethink — policies of zero or low tuitions, precisely because the increasing costs of tertiary education are starting to outrun the revenues available. Great Britain is an example of this issue: the government there has recently proposed that university tuition be allowed to increase up to 3,000 pounds, potentially leading to a real differentiation between university tuition and FE college costs. One might then expect to see patterns develop similar to those in the U.S., where students take the first few years of tertiary education in community colleges because of lower costs, and then transfer to the university to complete the baccalaureate. Similarly, while it has been forbidden in the Scandinavian countries even to think of imposing tuition charges, problems in financing tertiary education and the evident unfairness of providing high subsidies to middle- and upper-income students in universities has begun to cause a weakening of this taboo.[16] If pressures for expanding tertiary education continue to increase, we might expect to see tuition differentials increasing in other countries.

Of course, the tuition differentials between colleges and universities may be offset by access to grants, loans, or tax credits, particularly those available to low-income students in order to enhance equity. However, in a number of countries tertiary colleges have been at a disadvantage in access to these funds. In Australia, for example,

the clever loans systems known as HECS — the Higher Education Contribution Scheme, in which students repay loans for university out of their future income — is unavailable to students in TAFE colleges. In the U.S., various problems in getting access to grants and loans mean that eligible community college students are much less like to get either grants or loans than are comparable students in universities. And Great Britain seems to have gotten the details of its current funding proposals wrong, in allowing universities to raise tuition by up to 3,000 pounds while student grants will increase only by 1,000 pounds, potentially leading to a situation where more low-income students will favor FE colleges.

So the cost-related incentives for attending tertiary colleges versus universities are affected not only by the presence or absence of tuition differences, but also by the details of student grants and loans. And in many countries the discussion of funding structures have been driven by simple politics — institutions, students, and parents pressing for lower tuition, Treasuries pressing for lower subsidies — without much consideration of what a national policy toward tertiary education ought to accomplish. For example, a criterion of neutrality — of setting tuition and grant or loan levels so that students from all income levels are equally discouraged from attending tertiary education, and that there is no preference between colleges and universities caused by tuition levels — would certainly require income-contingent tuition (or income-adjusted grants and loans), and perhaps differentials in tuitions favoring tertiary colleges as well.[17] But until countries begin to recognize the complexities in funding a more complex *system* of tertiary education, these funding differences and the student reactions they cause will remain potential problems.

5.3 Overall Sources of Funding

The revenues from students are, of course, only one of many sources of funding for tertiary colleges and institutes. The other include funding from different levels of government; funding from employers; and potentially funding from research funds.

In some countries tertiary colleges are institutions of the national government, funded by national revenues; this is the case, for example, in Austria and in France (though a recent battle over decentralisation there has not been resolved). In other countries tertiary colleges are the creations of states or provinces, as in Canada, the U.S., Australia, Germany, and Switzerland. In these cases state or provincial funding substantially exceeds national funding; this is turn leads to differences among provinces according to income and / or taxation levels, a problem that may not be serious in a relatively homogeneous country like Germany but which serious differences in countries like the U.S. and Canada, where the revenue-raising potential of wealthy provinces are so much greater than in poor provinces. There have so far been no national efforts to equalize differences in spending across provinces, though efforts to increase the national share of funding would have some of this effect.

In addition, in some countries where tertiary colleges are clearly local institutions, serving the local economy, municipal funding is important; this is true, for example, of the state colleges in Norway, of community colleges in some states of the U.S., in Canada and Australia. In Finland 43% of funding comes from municipal governments, and 57% from the national government. One argument is that municipal funding enhances the chance that such colleges are responsive to local funding and therefore local conditions and demands; the countervailing argument is that this creates additional differentials in funding and quality. Again, the grant mechanisms of enhancing equitable resources levels among municipalities, with funding from either provincial or national levels, have been well-developed for elementary-secondary education, and these grant could be readily applied to tertiary colleges. But developing such mechanisms of equity has not yet been a priority in any country,

Employers presumably benefit from the labour force educated in tertiary institutes, and as beneficiaries they might be expected to contribute to funding. But employer contributions are not widely used except for a few cases: where employers provide the firm-based part of the dual education system, as in the *Berufsakademien* in Germany; or where institutes provide firm-specific training on a fee-for-service basis, as is true for U.S. and Canadian community colleges through economic development, as well as some Norwegian state colleges and Austrian employers that work closely with local FHS on specific projects. For more general funding, one could imagine, for example, an employer tax to support occupational education, or a “pay or play” tax like the one in Quebec, Canada, where employers either provide training or contribute to a tax fund for training. The purpose of greater employer funding is not only to increase resources available, but also to engage employers in more continuous discussions about their education and training needs. In Quebec, for example, the employer community has changed from an initial stance of hostility toward the “pay or play” tax to one of general acceptance because of its value in stimulating discussion among the social partners. However, the political feasibility of taxing employers seems remote in many countries, appealing though the arguments may be based on benefit principles of taxation.,

In a few countries there are separate funds for research or local service that tertiary colleges receive. In the U.S., for example, many states have funds for economic development that can be used to provide training or training-related support to local companies; several countries appear to have specific funds for local research, though the amounts and purposes are often unclear. In the absence of explicit funding for local research and public service, the extent of such research appears to be uneven and idiosyncratic, depending on the initiatives of individual faculty and administrators, and it’s difficult to learn how much of it goes on.

Finally, Finland has established some performance-based funding, based on evaluations of excellence in teaching, at excellence in regional impact, and on general performance criteria including completion rates. Great Britain has also has some

performance-based funding, in that it has provided some portion of payment to its further education institutions only when a student completes a program. However, performance-based funding is not yet widespread in tertiary college and institutes.

What might an ideal funding structure for tertiary colleges look like, and should it be different from that for universities? In countries where countries have tried to be like universities, like the FHS in Germany, differences in funding structures would be unacceptable. The alternative is to recognize that tertiary colleges are not universities: they have goals and students that are different, they serve local rather than regional or national purposes; and if they are to be flexible and responsive they need to have funding structures to match. A country might, for example, create a different funding structure for its tertiary colleges by placing some of the burden of funding on all beneficiaries, students and employers as well as different levels of government, partly to create a funding structure more like benefit taxation and partly to encourage discussion about these institutions. It should try to eliminate those differences among institutions that provide inequitable opportunities, and to construct tuition and grant or loan schemes that allow enhance equity. It might consider separate funding for distinctly different activities — research, student services, firm-specific training, perhaps lifelong learning as distinct from pre-employment education — so that some goals are explicitly provided rather than being neglected or provided only under idiosyncratic conditions. Such deliberations might, over time, expand the funding sources available to tertiary colleges and place them on a firmer footing, while assuring that their multiple purposes are well-served.

6. THE ISSUES OF EQUITY AND ACCESS

In many countries technical institutes and colleges were established to provide greater access to tertiary education, both by expanding tertiary education and by making it geographically more accessible; for example Norway has 4 universities but 26 state colleges, so much more of the population is located close to a state college. Indeed, this is one of the outstanding features of these institutions, since in every country where they are located there are substantially more tertiary colleges and institutes than there are universities. This is part of these institutions serving an essentially local role, to which I return in Section 9 and 10.2.

Sometimes more equitable access by income or family background has been an explicit objective of policy. Proximity to population in part of this, of course, since it reduces the living costs associated from being away from home. However, the equity effects of creating tertiary colleges is clearest when there are marked differences in tuition levels between universities and tertiary colleges. This is obvious in the U.S., where elite colleges can cost up to $30,000; elite public universities cost $4,000 - $10,000; second-tier universities cost between $2,000 and $6,000; and community colleges cost

between a few hundred dollars and $2,000 — in a country where the low-income population is quite sensitive to the cost of tertiary education. Such differences, though not quite as wide, also exist in Canada and in Australia. However, in Australia an excellent income-contingent loan system, HECS, enables university students to shift the cost of university to the later years of their working life, thereby reducing the negative effects of higher tuition on college-going among lower-income students (Gallager, 2003). And in many countries tuition levels are either zero for both universities and tertiary colleges — as they are in Norway and Finland, for example — or are both low and equivalent to tuitions in universities, as in FHS in Germany where tuition is low in both universities and FHS, or in Austria with tuitions of 360 euros (US$414) in all tertiary institutions.

In a wide range of countries with tertiary colleges and institutes, then, only geographic proximity gives these institutions an advantage in terms of equity and access, and tuition makes no difference. However, this may change in the near future. For example, Great Britain is moving towards a policy that will allow universities to charge up to 3,000 pounds (US$4710) in tuition, and one might expect tuition differentials to increase. While the idea of tuition-free tertiary education is sacred in the Scandinavian countries, the difficulties of funding expanding enrollments might force them to consider increasing tuition as well. So it's worth examining in greater detail what may happen to equity issues in tertiary colleges and institutes, particularly under conditions of tuition differential designed to make these institutions more accessible to low-income students.

Perhaps the clearest expression of these issues comes from the U.S., with its highly differentiated system of tertiary education, large tuition differentials, and endless debates over equity. Here the creation of community colleges has had two distinct influences, with countervailing effects. On the one hand, the expansion of community colleges since the 1960s has provided greater opportunities for low-income students, including individuals whose parents have not gone to colleges, recent immigrants, and minority students (which in the U.S. means Latinos and black students). All the enrollment data show that a higher proportion of community colleges students come from low-income families, from families where the parents have not gone to colleges, from families with lower-status occupations, and from immigrant families, compared to universities.[18] Proponents of colleges have seized on such facts as evidence that they provide greater access to students who would not have otherwise been able to attend postsecondary education, and have celebrated these institutions as "the people's college" and "democracy's open door" to tertiary education.

On the other hand, critics have charged that the lower costs of community colleges, as well as the sometimes biased counseling available in the education system, have tended to steer low-income individuals towards community colleges rather than universities, and to lower-status occupational programs within colleges rather than higher-status academic or transfer programs. They have charged that this process of

"cooling out" low-income students — with the term derived by the process by which con artists get their victims to blame themselves for being fooled — in fact makes community colleges inegalitarian because they steer such students to lower-status, lower-earning alternatives. The debates between the believers and the critics of community colleges is one that might apply to any form of differentiated tertiary education, where differentiation involves greater ease of access and lower costs but also lower levels of resources spent and lower-level degrees.

What this debate is really all about is that the expansion of technical colleges and institutes may simultaneously *increase* levels of education for some individuals who would otherwise not have gone beyond secondary school ("educational upgrading") and decrease education attainment for other individuals who might otherwise have gone to university ("cooling out"). Another way to see this is that an increased probability of attending a community college could come either from a reduced rate of completing secondary school only, in which case educational expansion has taken place; or it could come by reducing the probability of entering a university (cooling out). Of course, both processes may take place simultaneously, for somewhat different groups of students, and then the overall effect on equity is an empirical question — of whether "educational upgrading" outweighs "cooling out" or not. In the U.S., there is by now fairly conclusive evidence that upgrading dominates cooling out,[19] but of course this is not necessarily true in other countries. Some of the factors that surely influence "educational upgrading" include the costs of tertiary colleges and institutes compared to universities, information about their economic benefits, proximity, guidance and counseling mechanisms at the secondary level, and higher-quality institutions that promote the completion of students and their possible transfer to universities. "Cooling out" is more likely to occur where counseling is biased, when tertiary institutes are of low quality (because of lower funding levels, for example), and where the cost differentials between tertiary colleges and universities are large without compensating mechanisms for low-income students (like student grants). There are, then, steps that countries and institutions can take to prevent "cooling out", but they require specific attention to several specific dimensions of tertiary colleges. .

The equity issues in tertiary colleges therefore prove to be more difficult than it appears at first glance, and they involve more aspects of these institutions than merely creating them as alternatives to universities. What is particularly damaging toe the cause of equity is creating non-university alternatives and then funding at substantially low levels than the university — as happens in virtually all countries. The exception is France, where the IUTsspend about 8800 euros per year while universities spend 6600, this has made IUTs in many ways more attractive than universities, and may have contributed to the greater success of the IUTs in getting students to complete their programs. This particular funding pattern is one that other countries might consider if they intend their non-university institutions to further the cause of equity.

7. THE QUALITY OF TEACHING

One of the persistent attacks on universities is that their teaching is poor — dominated by lecture, in large classes where is very little room for interaction among students and professors, with dry academic lectures with little attempt to connect the subject matter to any applications. In some countries the low quality of university teaching has been an explicit reason for establishing alternative institutions; this has taken place in Finland, for example, in the development of the polytechnics; in France, where universities have been widely criticized as slow to respond to legislative mandates, rooted in old disciplines, devoted to highly theoretical instruction in huge lectures, using conventional teaching without new technologies. In the U.S. the community colleges pride themselves on being "teaching colleges", with smaller classes and more seminars compared to universities dominate by conventional lecture, and with faculty concerned more about teaching than research. Similarly the FE colleges in Britain have instructors who are more concerned with teaching in student-centered ways. Where university teaching is criticized as being of low quality, then the hope is that alternative institutions can create new cultures around teaching to facilitate approaches that are more student-centered, more inclusive of a variety of applications, more inter-disciplinary rather than being dominated by thee conventional academic disciplines, and more open to using new technology. In addition, the occupational orientation of these institutions compared to the academic university means that

However, while technical colleges and institutes may have the possibility of changing teaching practices, this does not mean that changes in fact occur. In Germany, for example, both universities and the FHS have been accused of "structural neglect" in the quality of teaching; the FHS, trying as hard as possible to become like universities, seem to have developed the same approaches to teaching. In Great Britain, Harkin and Davis (1996a and b) found that, while many instructors claim to use discussion and small-group techniques, in fact their practices were dominate by lecture methods even in classrooms; while there are a number of programs in Great Britain to prepare FE College instructors for the methods thought appropriate for teaching adults, apparently many instructors did not in fact use them. In many countries occupationally-oriented technical institutes technical institutes use high proportions of part-time instructors who normally work in industry; while this is an excellent method of assuring expertise in occupational issues, it does nothing to provide these individuals with preparation in pedagogical methods, and they are quite to teach as they have themselves been taught.

In my own research in the U.S. (Grubb et al., 1999), we uncovered a wide range of teaching practices that could in turn be linked to institutional approaches to teaching. While community colleges are universally dedicated to the image of being a "teaching institution", in many of them teaching practices follow the same dreary, theoretical, lecture format for which universities have been criticized, even though classes are smaller. In other cases individual instructors and, more importantly, entire colleges

display a range of teaching innovations including more discussion-oriented and student-centered teaching, co-teaching and interdisciplinary teaching, novel uses of computers and distance learning, and the integration of internships and other forms of work-based learning. The differences can often be attributed to the ways the different colleges use the institutional resources available to them, resources that can serve either to enhance the quality of teaching or to ensure than conventional teaching takes places because of neglect of the alternatives. Such institutional mechanisms include the amount of teaching required, hiring practices and promotion practices, the requirements of training in pedagogical methods before starting to teach, the availability of staff-development or training in pedagogical issues after beginning to teach, the availability of sustained mentoring programs, the creation of teaching centers for faculty to use to improve teaching, the availability of funds for experimenting with teaching methods and technology, and the support of administrators. The point is, as in the Great Britain case, that there are certainly mechanisms that tertiary colleges (and universities too, for that mater) can use to improve the quality of teaching; but if there are no systematic steps take to develop these mechanisms of improving teaching, then instruction is likely to follow the traditional patterns of universities.

There's a further problem associated with teaching in occupational subjects. All of the offerings in technical institutes and many of them in technical colleges are in occupational or professional fields. Occupational and professional teaching involves a series of issues that do not arise in academic instruction, and that present special challenges for instructors. These subjects often include workshops or labs — for example, in engineering, in medical fields, in computer-related fields, in tourism and the culinary arts, and certainly in the traditional vocational fields like construction trades, automotive technology, agriculture, and the like — in addition to classroom instruction, and instructors face the task of integrating class-based instruction and more practice oriented instruction in workshops. Occupational instruction often require competencies other than those necessary in academic subjects; for example, many occupations (architecture, drafting), require visual competencies, some (the conventional trades, technical occupations, some health fields) require manual or kinesthetic competencies, many require sophisticated interpersonal competencies including the "higher-order skills" like cooperation and communication; and many occupations require these non--cognitive competencies in conjunction with certain applied and non-standard forms of reading, writing, math, and other academic subjects. Finally, occupational instructors serve at least two and sometimes three or four masters: the student interested in acquiring competencies for the long run; employers, with their own conceptions of what competencies are necessary; the requirements of licensing mechanisms and exams for degrees and qualifications, for many occupations at the tertiary level; and sometimes the educational institution, with its conception of what a degree requires. Ideally these three or four conceptions of what should be taught are consistent with one another, and this is particularly the case where extensive consultation with social partners takes place. But often occupational instructors are caught having to negotiate among conflicting demands.

While there has been extensive attention to the teaching of reading, writing, and math, there has not been comparable attention to the nature of teaching in business, or technical fields, or health occupations, or business. There is extensive writing in German, particularly at the secondary level, because of the importance of the dual system in German-speaking countries, but almost no writing in English or French, and probably very little in other languages with fewer speakers.[20] There is not, in most countries, a community of instructors worrying about the nature of teaching in occupational and professional subjects, and therefore nowhere for instructors in tertiary institutes and colleges to turn if they want to improve their instruction. So occupational instructors are faced with a serious problem: their teaching is in many ways more difficult than teaching in standard academic subjects, but they appear to have fewer sources of information and support related to pedagogical issues.

In the current writing on tertiary institutes and colleges, there has been strikingly little attention to teaching issues. There is very little mention of institutional practices to support teaching, and very little mention of teaching innovation.[21] While there is some recognition that large lectures focusing on theoretical material is probably not the best way to teach, this position is often used to attack universities rather than to clarify what alternative forms of tertiary education should do. So there's enormous promise in developing tertiary colleges and institutes to improve teaching, but that promise is often unrealized.

8. THE ECONOMIC BENEFITS OF TERTIARY COLLEGES AND INSTITUTES

One of the crucial questions, particularly in the case of institutions that have been established or expanded recently, is what their benefits for students are. Of course, tertiary education has such a wide variety of benefits that it's almost impossible to list them, never mind measure them: they include increases in knowledge of many different sorts, a greater sophistication and precision in thinking about issues, changes in values like tolerance and receptivity to new ideas, greater familiarity with the range of human accomplishments and the humanities, greater willingness to engage in political and civic life, a broader network of friends and acquaintances, as well as the degrees and qualifications that gain access to better employment, greater status, and higher earnings. All of these are valuable, even though some have been forgotten in the rush to have tertiary education serve the Knowledge Revolution and the Education Gospel.

However, in the case of tertiary institutes in particular, and in tertiary colleges as well, the dominant occupational purposes mean that the employment benefits are probably especially prominent in the eyes of students, policy-makers, and perhaps employers; at least, if there are no employment benefits, then these institutions would have to justify their existence in other, less familiar terms. In many countries — for

example, Austria, Finland, Norway, and Switzerland — these tertiary institutes are too new to have been extensively evaluated. In other countries with more extensive histories, there is often a great deal of anecdotal information about the benefits of alternatives to universities, but not much statistical evidence because of the lack of the appropriate data. And then there is an endless series of technical problems in estimating the benefits associated with different levels of schooling.[22] As a result benefits are often taken as an article of faith — what I have called the naïve form of human capital, assuming that al increases in competencies will be translated into employment benefits — rather than resting on a firm empirical base.

One source of information is the data on earnings compiled by OECD (2002, Table A13.1) as part of its series on education indictors. The figures in Table 4 reflect efforts to calculate earnings of individuals who have completed tertiary type B programs, which are shorter and more occupationally-oriented programs including many (but not all) of the tertiary colleges and institutes; they also calculate the relative earnings of those completing tertiary type A programs, which are generally (but not always) universities. They describe earnings relative to those individuals with upper secondary education only; for example, a figure of 116 for Australia states that individuals with TAFE qualifications earned 16% more than those completing secondary school. Like all other international figures these must be treated with caution since they sometimes do not reflect the distinctions in this report; for example it's not clear whether the Type B programs correspond to the tertiary colleges and institutes described in this report, and there are other technical problems with these figures.[23] However, they represent one effort to compile comparable data for many countries, and depend on the best efforts of data analysts in many countries to come up with comparable numbers. They indicate that tertiary type B institutions always have a substantial earnings benefit, sometimes in the range of 11 to 20 percent but substantially higher (28% to 36%) for the U.K., Switzerland, and the Netherlands (ignoring the anomalous case of Norway). Not surprisingly, these benefits are smaller than those from Type A institutions including universities, sometimes much lower (Finland, the U.S) and sometimes only slightly lower (the Netherlands, Switzerland) but usually on the order of 45 – 50 percentage points. This suggests why the university remains such a powerful attraction in most countries: while non-university institutions do have substantial economic benefits, they are nowhere near as large as those from universities.

Table 4 Earnings of the population 25 – 64 with tertiary education relative to those with upper-secondary education

	Tertiary type B	Tertiary type A
Australia	116	144
Canada	112	162
Finland	120	190

France	125	169
Germany	115	163
Ireland	111	157
Netherlands	136	141
Norway	153	131
Switzerland	144	164
U.K	128	174
U.S.	114	181

Of course, it's difficult to compare these figures for many different reasons, apart from uncertainty about the underlying data. These kinds of earnings premiums are surely influenced by the relative size of tertiary segments, as well as by overall disparities in the distribution of earnings. Therefore a careful analysis of differences among countries in the benefits to tertiary colleges and institutes would require a much more careful analysis than the simple comparisons of means.

In a number of countries sufficient evidence has accumulated to developed more detailed conclusions than those in Table 4. Many of these come from the English-speaking countries.[24] In Great Britain, for example, sub-degree qualifications earn males an average of 14% more for males and 17.7 %more for females compared for individuals with upper secondary qualifications only. The first university degree earns an additional 10 % for makes and 26% for females. However, the returns from specific kinds of sub-degree qualifications vary enormously. Some short low-level qualifications (NVQs) have *negative* effects while others have benefits as high as 22% for men and almost 36% for women.[25] Such results clarify the enormous importance that particular types of degrees can make when a tertiary college like FE colleges offer a huge variety of programs.

In Australia, the results indicate a substantial benefit of VET credentials – most of which come from TAFE colleges – on full-time employment rates; then for those fully employed their increase their wages and occupational status. More specifically, a two-year Associates degree increases wage by 9 percentage points over those who have completed secondary school for males, and a baccalaureate degree increases wages by another 16.7 percentage points; comparable figures for females are 7.3 percentage points and 18.7 percentage points.[26] These are smaller differentials than in the U.K., but they still indicate positive effects of TAFE degrees, though still greater effects of baccalaureate degrees.

The research on community colleges in the U.S. is particularly extensive.[27] Like the British and Australian results, they indicate substantial benefits to completing two-year degrees, on the order of 20 percent for men and 30 percent for women — smaller than the returns to a baccalaureate degree, of course, but also requiring half as much tertiary education. However, the closer one examines these figures, the more

complications arise. Not surprisingly, there are substantial differences among fields of study, with the economic benefits particularly high for business, for technical occupations, and for health occupations (especially nursing for women) and low in agriculture and early childhood programs. The distributions of benefits tend to overlap, so that some individuals from community colleges in technical or business fields earn more than some who have completed baccalaureate degrees, say in language or education; conversely those completing a community college program in early childhood education or in agriculture or horticulture may earn less than a secondary school graduate. This in turn leads to complaints about levels of schooling failing to generate benefits even though they do on the average. It also generates odd practices like university graduates (in poorly-paid fields in the humanities, for example) then attending a community college to earn a degree in a better-paid subject like IT. In addition, it matters a great deal whether an individual finds employment in the area for which he or she has been trained: the earnings effects of community colleges (and universities as well) are much higher for those in related employment, especially for women. So additional tertiary education may be important, but it is not always sufficient to improve employment and earnings: it is often necessary in addition to be in the right occupational field and to find employment related to the field of study.

The U.S. results — but not those for Great Britain or Australia — also clarify that students who complete small amounts of education in community colleges are unlikely to benefit from it; that is, completion of degrees or credentials is necessary for substantial benefits to occur. This may not be surprising in qualification-conscious countries, but in countries like the U.S. and Canada with less regulated labor markets there are often claims that even small amounts of tertiary education benefit individuals. Similarly, French data indicates that individuals who start a DUT program in an IUT suffer an earnings penalty of about 15% compared to those who complete the DUT, though they may still have higher earnings than those with no credential past a upper secondary diploma.

This in turn raises a problem that is relevant in many countries. The rates of *completing* degrees and qualifications are often not known with any accuracy because of the lack of longitudinal data. However, there are widespread concerns that completion is lower in tertiary colleges and institutes than it should be, leading to the problem of "wastage" as students "waste" the tertiary education they receive. For example, in Germany there is general concern that non-completion has increased recently because of problems in the transition between secondary and tertiary institutions. The rates of non-completion are thought to be 30% in universities and 22% in FHS; in addition, "decline rates" including -completion plus switching majors are estimated to be 45% and 28% respectively, which implies that there is more "wastage" in the form of switching majors in universities compared to FHS.[28] Finland has reported that 6% of students dropped out of the polytechnics in each year (excluding those who left to go to a university), implying perhaps a 24% dropout rate over 4 years. Some of them left to study at another educational institution, some went into employment, and some

because they were doing poorly. While the dropout rates are not particularly clear,[29] they are high enough to have caused some concern. for example, among those entering community colleges in 1989-90, only 38.4 percent had earned a degree five years later — 13.8 percent a certificate, 18.6 percent an Associate degree, and 6.1 percent a baccalaureate degree. In addition, 13.6 percent were still enrolled but 48 percent had earned no degree and were not still in college.[30]

In addition, in other countries without good data, there is still a concern that dropout rates are too high. For example, in Australia there is considerable non-completion because of financial pressures, which are especially serious among mature students. In the U.S., interview data indicates that high rates of non-completion, among older students in particular, is often due to the "family-work-schooling dilemma" where older students with families also have employment responsibilities, causing them to drop out if their family or employment responsibilities become too great.

These figures, incomplete as they are, still indicate there is a pervasive issue with dropping out in tertiary colleges and universities.[31] The reasons vary, but they include problems in the transition from secondary to tertiary education including unrealistic expectations of students; the lack of students support services in some countries, including the lack of grants and loans for low-income students; for mature students, the difficulties in mixing education with employment and family responsibilities. But whatever the reasons, the effects include an inability to take advantage of the employment benefits of these institutions.

Of course, there may be critical non-economic benefits of attending tertiary colleges, just as there are for universities. But the economic benefits are surely critical because the occupational nature of these institutions. Overall, the evidence is inconsistent, and suffers from common problems – particularly when we want to compare results across countries. But it seem reasonably clear that tertiary colleges and institutes have substantial returns, though considerably lower than those of universities, though the benefits vary by type and length of degree, by field of study, by gender, and by whether individuals find employment in the field they have studied.

9. THE ISSUES IN FEDERAL SYSTEMS: LOCALISM VERSUS GLOBALISM

Many countries with tertiary colleges and institutes also have a federal structure of government — Germany and Austria with Lander, the U.S. and Australia with states, Canada with provinces, Switzerland with cantons. (I'll call all these sub-national governments provinces for ease of reference.) In some cases these don't make any difference to the operation of tertiary institutes; for example, in Austria the FHS are created and funded by the national government and constitute a national system of institutions, with variations among individuals institutions but no differences among

Lander. But in most countries with federal systems, tertiary colleges are the creations of provincial governments, and the differences among provinces or influence tertiary colleges as well, in ways that illustrate the trade-offs between localism and globalism.

The differences among provinces are probably best illustrated in the U.S. with its 50 states. Community colleges are created by states, and receive almost 44% of their revenue from states; in contrast the national government provides only 5.3% of revenues, and has very little influence over community colleges. The states then vary substantially in the purposes of colleges; for example, North Carolina has a highly occupationally-oriented system of colleges, while several states support technical institutes with occupational education only; on the other hand, California has a more academic and transfer-oriented set of colleges. The states also vary widely in the generosity of their funding per students, and in the extent of integration with other programs, ranging from states where community colleges provide many labour market programs to those where colleges are relatively isolated (as I described in Section 4 above). While the national government has tried to influence a few of these differences — for example, in the past it has provided funds to integrate community colleges with labour market programs — it has largely confined its efforts to funding individual students through grants and loans, and provides relatively little institutional funding except for some modest experiments with innovations. In this situation it is unrealistic to speak of a national system of community colleges; there are at best 50 separate systems, with certain similarities around the country but many differences. And because the states collect data in different ways, it is difficult to find comparable data on all 50 states.

In Australia the TAFE system is run by the states, and very little information exists about the TAFE "system" as a whole. As in the U.S., the states vary in almost every dimension of governance, and there has been little effort to "harmonise" or reconcile the differences.

In Switzerland the FHS are operated by cantons, not by the national government as in Austria. Each canton sets its own fees as well as student aids and grants; fees vary modestly among cantons while student aid varies more substantially, at least in theory leading to greater problems of equity and access in some cantons compared to others, and indeed rates of graduation vary substantially (from 2% to 15%) across cantons. However, there is no widespread concern about these differences, and there has been no effort to reduce the levels of these disparities.

In theory, funding and governing technical colleges at a provincial rather than a national level permits them to serve regional populations and their needs better than national provision would. In the U.S., this is most obvious in states that have integrated their community colleges into their other economic development and labour market programs. In Switzerland this is clear in the emphasis placesd on local ties, and on the assumption that almost all students will choose a tertiary institute close to their home.

However, many of the other dimensions of variation among provinces are less desirable. For example, the differences among provinces in the proportion of the relevant age-group served means that access can be much worse in some provinces than in others; variation in expenditures per student mean that students in some provinces have access only to low-quality institutions. If there is considerable mobility of individuals around a country, then differences among provinces in tertiary colleges may make it difficult to gain access to programs; similarly, national employers have sometimes complained in the U.S. that the variation among states makes it difficult to know how to use community colleges for labour force preparation. In most cases, connections between tertiary colleges and employers is something that often needs to take place at the local level, not at a regional or provincial level; for example the state colleges in Norway are operated and partly funded by municipal governments, partly in order to provide local rather than regional oversight of their operations. And provinces may be too small to develop certain activities that might benefit from economies of scale; for example, research is something that might best be carried out at the national rather than the provincial level, and similarly experiments with innovations — for example pilot projects with evaluation to see if they should be extended — may be more efficiently done at the national rather than the provincial level. And so there are many sources of variation in countries with federal systems that don't appear to be particularly desirable, despite the rhetoric about sub-national governments being better able to meet the needs of both prospective students and employers.

The theory of fiscal federalism within economics suggests a number of conditions where national governments might intervene to improve the services provided by sub-national governments. One large class of possibilities involve the inequalities among provinces, which can normally be moderated or eliminated only by national intervention — for example, by redistributing funds from wealthy (or high-spending) to poor (or low-spending) provinces, for example to even out the access to tertiary colleges among provinces. However, none of the countries with federal structures have taken any steps to equalize the funding of tertiary colleges; the most any of them has done is to provide funding to low-income *students* through grants and loans — as the U.S. and Canada have done[32] — but which only indirectly redistributes from provinces with low concentrations of low-income students to those with high concentrations. Another role for national policy would be to support those activities that benefit from economies of scale, like experimentation with innovations, or that provide pure public goods available to all, like research and development activities or information about the availability of institutions in different states — information that might be useful to prospective students and employers alike. . However, here too national governments seems to have played a relatively minimal role in supporting research on tertiary institutes or providing information across the country ; there are, for example, no nationally-sponsored research institutes to study these institutions in any of the countries with federal systems. A third possibility is for national

governments to minimize the potential problems that can arise with mobility among provinces; for example, provinces with large amounts of out-migration may be unwilling to fund education at high enough levels because they don't capture the benefits.[33] But here too national governments have not even considered such options, and they have been content to let provinces run their own institutions.

The only area in which national governments have intervened even minimally is in setting certain national standards, presumably for the protection of both students and employers. The U.S. national government has done this through the accreditation of community colleges, largely to try to reduce the rate of default on national loans to students; since accreditation provides only minimum standards at the institution level, the protections for students and employers are comparably minimal. Many European countries are now starting the process of setting up accreditation mechanisms.

In other cases national governments set minimum standards because the qualifications tertiary institutions provide are regulated by a common framework. For example, the FHS in Germany all give a Matura at the end of a three-year program. But even here there is great variation possible; in the U.S., for example, many states recognize both one-year certificates and two-year Associate degrees from community colleges, but these degree structures have developed over time by states emulating one another, not because of any national framework, and the content and intensity of these degrees are unregulated.

Overall, then, national governments have not yet done much to address the special difficulties that may arise for tertiary colleges in countries with federal structures. There have been very few efforts to take on the roles suggested by fiscal federalism, or to eliminate the variation that is created when provinces established their own systems of tertiary colleges. The result in these countries has been so far to leave in place a system of tertiary colleges and institutes with substantial variation among provinces as well as variation within provinces.

However, for one group of countries another development related to federalism poses some distinct challenges to tertiary colleges and institutes: the increasing role of the European Union, both for existing members and for new members in the coming years from central and eastern Europe. The EU is, of course, a supra-government, and its relationship to member countries is much like the relationship of national governments to provincial governments. Like national governments, the EU can concern itself with inequalities among countries — and it has indeed redistributed to some extent from rich to poor countries — with minimum standards, with pilot projects, and with disseminating information and limited amounts of research. For tertiary education, the major initiative has been the effort to set common standards for degrees through the so-called Bologna process.[34] This effort illustrates the conflicting pressure that some tertiary institutions are in, pulled between the demands of localism and the demands of globalism.

The Bologna process has been motivated by two underlying assumptions: that Europe would benefit from having a single labor market (at least for occupational requiring a tertiary degree), and that the mobility of individuals among countries and of employers hiring on the basis of degree would benefit from having a common structure of degrees; and that European institutions can better compete with other countries — particularly, it seems, the United States — if they provide a common and easily-understood set of degrees for students shopping in the global marketplace for tertiary education. While the Bologna declaration itself calls only for the development of a common framework for degrees, the process has generated an effort among countries to create a structure similar to the U.S. pattern: a baccalaureate degree earned after 120 credits, roughly 3 – 4 years in length; a master's degree earned with another 60 credits, or another two years; and a doctorate degree reached with another 60 credits, or another three years. Many European universities have been moving to adopt something close to this 3 – 5 – 8 structure, and in some cases this has taken substantial energy.[35]

For all of tertiary education, the Bologna process represents a supra-national government establishing standards in the interests of creating a supra-national labour market. But this creates some special difficulties for tertiary colleges and institutes as distinct from universities, even though many such institutions have been eager to be part of the process.[36] One is that many degrees now offered by these institutions do not fit into the baccalaureate-master's-doctorate framework of the Bologna process. The British FE colleges, for example, provide a wide variety of short degrees up to two-year Higher National Degrees; while it might be a good thing to eliminate many of the shorter degrees,[37] they have been established by government policy over a long period of time and are unlikely to be quickly given up. The French IUTs offer the two-year DUT (*Diplomme Universitaire de Technologie*), and it is uncertain what would happen to them under the Bologna process; some would like to extend their programs by a year to provide a bachelor's degree, but that would create direct competition with universities. Similarly, the degrees offered by FHS are not quite bachelor's degrees; while most FHS would clearly like to become full-fledged universities, that would undermine the purpose of having a distinctive non-university sector. So far, then, despite protestation to the contrary, the Bologna process looks like one that creates pressure to reduce diversity in tertiary education, whereas colleges and institutes were generally established (or expanded) to increase diversity.

A second problem is that the Bologna structure of defining degrees in terms of credits starts tertiary institutions down a slippery slope, all too obvious in U.S. community colleges. Where degree requirements are stated in terms of units or credits, rather than unitary programs that must be taken as a whole, there is inevitably a tendency to divide the curriculum into modules or courses of several credits apiece. Many institutions have been trying to move toward modules, partly on the assumption that modularization increases the likelihood of completing since students can take modules at different periods of time; modularization has been especially popular as a

vehicle for older students and lifelong learning. But whether modules *increase* completion by making education more flexible or *decrease* completion by allowing (or even encouraging) students to take a program in bits and pieces — where they intend to return to complete degrees but never do so — is unclear, and a good case can be made for both propositions. Furthermore, modularization in the U.S. has begun a process of allowing students to take different modules in different institutions, one that over time leads both to incoherent programs composed of small units from different institutions (Smith, 1993); this then leads to pressure to standardize modules across institutions so that students can more readily combine modules from different institutions, another homogenizing force. These tendencies cannot yet been seen in Europe because the Bologna process is not far enough along, and they have not yet emerged in Great Britain where the new Foundation Degrees mimic the U.S. Associate degrees based on credit requirements. But the institutional logic of credit systems is to fragment the curriculum in these ways, something that can be prevented only by addressing these dangers directly.

A third problem with the Bologna process is that it focuses attention on global issues — or at least Europe-wide issues — instead of local issues. To some extent, of course, tertiary institutes and colleges are already operating in a global settings since students themselves are moving across country borders; many institutions have tried to attract more foreign students, and many of the non-European colleges in Australia, Canada, and the U.S. have been trying to lure more foreign students— in part resting on the advantage of teaching in English, the world's common language. But the advantage of these institutions, and one reason they were established in many countries, is to serve local needs, not national or global needs; their students are more likely to be local, the employers they deal with are local, and the labor markets for which they prepare students tend to be local rather than regional, national or international. Therefore one of the assumptions underlying the Bologna process — the desirability of a Europe-wide labor market — is unlikely to be met for the labor markets served by tertiary colleges. This leaves only competition for students as a justification for the Bologna process, and one wonders how important this can be compared to the range of other purposes or missions these institutions can serve (outlined in Section 2). Furthermore, it's possible that the effort to participate in the Bologna process might take up institutional energy that could be better spent on other dimensions of improvement or development.[38]

Overall, then, the question for tertiary institutes and colleges is whether the benefits of the Bologna process are worth the costs, and whether the pressures toward globalism are worth the weakening of local focus. One possibility, already well underway, is to focus the Bologna process on universities only, on the assumption that it is at this level that competition for students is most important and the assumption of a European-wide labor market are more likely to be met. Another is at least to understand the tradeoffs before engaging in any globalizing process.

The issues involved in federalism, and the trade-offs among local control, provincial control, national participation in correcting the problems generated by provincial or local provision of tertiary colleges and institutes, and the new challenges generated by the European Union have been debated over many decades in many countries, and they do not have any elegant or final solution. But the way these issues emerge in tertiary colleges and institutes is somewhat special, since some goals of these institutions — creating diversity in tertiary education and responding to local needs in particular — are contrary to other goals including greater equity, standardization in the interest of transparency, some of the goals of globalization. But without recognizing these issues, it is difficult to think that any solution can emerge simply by chance.

10. THE ISSUES OF IDENTITY: WHAT SHOULD TERTIARY COLLEGES BE?

When OECD examined tertiary colleges and institutes three decades ago, a central question was whether these institutions has yet developed a clear identity within tertiary education, a distinctive role for them to play alongside the older, higher-status universities. Three decades later, after substantial growth and the development of new institutions in several countries, this is still a question worth posing.

By now, technical colleges and institutes are well-established in tertiary education, at least in the countries reviewed in this report. As the figures in Section 2 reveal, they now serve substantial numbers of students relative to universities in all countries except perhaps Austria. Even in countries like Finland, Norway, and Austria, where tertiary institutes were established less than a decade ago, they seem to have a firm role in tertiary education; all government reports mention universities and tertiary colleges in the same category, and there seems to be little chance that these institutions will disappear. Indeed, they are growing relative to universities in most of these countries and so — particularly if countries continue to expand tertiary education, in response to the Knowledge Revolution and the Education Gospel — these institutions are likely to be relatively more important over the next few decades.

But sheer size does not resolve the problem of identity: the question of whether these institutions have developed a clear and positive image for themselves, rather than simply being non-university and non-research institutions within tertiary education. As with everything else in this sector of tertiary education there is enormous variation among countries *and* within countries, so that blanket generalizations are difficult to make. However, there appear to be two large issues that have emerged in various countries, and several different ways that tertiary colleges and institutes have created clear identities for themselves

10.1 Educational Institutions or Trade Schools?

One involves a question of whether these institutions are properly *educational institutions* or whether they are *trade schools.* The image of a true educational institution comes from the most prestigious universities around the world, institutions like Oxford, or Harvard, or Goettingen, or Melbourne. These are not simply places where students come to earn a qualification for the labour market, though there is little doubt that such places do enhance the future employment of their students. These are also places where students engage in a great deal of intellectual exploration, in which they learn not only the content and the ways of thinking of their major subject but also a great deal about other subjects, either through the curriculum or through the other activities — sports, cultural events, discussion groups, clubs — of the university. In the Anglo-American tradition, these are places where students discover their own identities, and make the transition from adolescence to adulthood; in the German traditions, these are places of *Bildung*, of personal development in a larger sense than simply receiving a degree. Institutions that aspire to be educational institutions therefore provide more than the subject matter for a major subject, and they have active student life whether they are residential universities or not. Often there is a roster of student services including career guidance and counseling, sometimes personal counseling, and other forms of support, partly to help students with the developmental process. The institutional emphasis I have taken in this report is consistent with the image of educational institutions.

On the other hand, what I will call trade schools simply provide the courses necessary to earn particular qualifications. Students come single-mindedly for that purpose only, the institution is not seen as a place of other forms of development or a focus of social life, and the range of student services is limited or non-existent. Trade schools certainly serve important purposes; for example, they are appropriate for individuals who know precisely what they need to learn, for individuals who don't need a community of peers or a period of personal development; many forms of lifelong learning and upgrade training for employed individuals are provided quite well in what are essentially trade schools, for example. But they should not be confused with the broader ambitions of education institutions. A policy emphasis on courses rather than institutions — as in Australia or the U.K, as well as in Sweden in the non-university vocational programs — leads to places that are more like trade schools. Conversely, the reforms in countries like Finland and Norway - where tertiary institutes were formed by consolidating smaller specialized vocational programs — look like a process of converting small trade schools into educational institutions.

Among tertiary colleges and institutes, there are some that are clearly educational institutions. The state colleges in Norway, for example, are places where students spend considerable amounts of time. They advertise themselves on their web sites with pictures of attractive campuses, celebrate the local communities in which they are located, and provide a range of student services; students reportedly identify with the state college they attend and not just with the major subject they learn. Similarly, the FHS in Germany — which aspire to be universities, as I will illustrate below — offer student services, placement offices, and counseling, and are places where students

spend a great deal of time; students view both universities and FHS not as a temporary stage of life, preliminary to moving to employment, but as a more extended period of time to "develop their own identity", a period of *Bildung*. The Finnish polytechnics and the Swiss FHS are also more like educational institutions, where students – most of them of conventional ages –spend substantial periods of time, where student services and activities are available.

At the other end of the spectrum, the Australian TAFE colleges are more like trade schools. Their catalogues provide an enormous range of courses preparing students for different qualifications, but prospective students need to know precisely what qualification they want to earn before they enroll; students come for their coursework and then leave, and they do not take coursework unrelated to their qualification or engage in other student activities. The funding mechanisms encourage this kind of institution: colleges are paid for student enrollments in programs leading to qualifications, and they receive little institutional funding that might support the other activities of an educational institution. There has been a tendency among policy-makers to treat TAFE as just another provider of vocational education, rather than as institutions with special roles. Similarly, the FE colleges in Great Britain look a great deal like trade schools or purveyors of vocational courses, all of them governed by a government-sanctioned qualification; they again offer a vast array of qualifications but very little that looks like student life, or broader forms of development, or non-vocational offerings. As in Australia, government policy has encouraged a trade school approach and discouraged institutional development; a 1990 report from the Further Education Funding Council, *Funding Learning*, declared that "We want to fund learning, not institutions",[39] and government agencies talk not of institutions or of FE colleges but of a "learning and skills sector" in which any kind of provider can compete for students. In both Great Britain and Australia the policies that contribute to supporting trade schools are an effort to get away from supply-driven VET and to move to demand-driven (that is student-as-consumer driven) VET. But the downside is that it leads to providers that look like trade schools rather than educational institutions.

In the middle there are various tertiary colleges and institutes that have characteristics of both educational institutions and of trade schools. In the U.S. and Canada, for example, some community colleges are highly-developed educational institutions with a full range of student services, active student life, a wide range of extra-curricular activities, and inviting campuses. They take care to integrate new students into the campus community, provide support for "experimenters" unsure of what they want to do, and take an explicitly developmental perspective.[40] Other colleges, particularly impoverished colleges in central cities, provide many fewer ancillary services and look more like trade schools. And even colleges that are educational institutions can be trade schools for some students; as an occupational student in one community college noted, "I don't really feel this is a college. For me, it's just a culinary arts program — the program here is, like, so different from any other part of the college." In particular, older students, employed students, and part-time

students attending in the evening may use a college for upgrade training, treating it more like a trade school rather than a "real college". And so those tertiary colleges with more full-time students, more students of conventional age rather than older students, and students attending during the day rather than the evening are more likely to be educational institutions, while other tertiary colleges look more like trade schools.

This dimension of identity depends on institutional ambitions and culture, on government policy, and on student needs. The state colleges in Norway and the FHS in Germany are following the images of universities in their countries, and government policy has allowed them to do so. TAFE colleges and FE colleges might also want to emulate universities, but government policy in Australia and Great Britain has been hostile to funding their tertiary colleges as educational institutions; it has been willing to provide governmental support to Oxbridge and the University of Melbourne as rich, residential institutions, but at the middle level of vocational preparation it has been unwilling to fund more than the provision of qualifications. And the needs of students drive these institutions in obvious way: tertiary colleges with younger, full-time students like the Norwegian state colleges and the German FHS are more likely to look like educational institutions, while evening programs for part-time students look more like trade schools.

The question from a *student* perspective is what tertiary colleges should be like, and from a *policy* perspective what countries should support. From the student perspective, greater choice is surely preferable to less choice, so a flexible or *hybrid* institution — one that provides both the services and support of an educational institution, particularly for students who want a more developmental program, and courses on non-standard schedules appropriate for evening or part-time students for students who want something more specific — allows *students* to choose what kind of institution they attend. Perhaps the best examples of such hybrid institutions are the better community colleges in the U.S. and Canada, which incorporate lifelong learning alongside well-developed colleges. From a policy perspective, the decision to fund some students in educational institutions while others get the more restricted benefits of trade schools is not only inegalitarian but potentially ineffective, since it may result in higher levels of non-completion, switching major fields, and other forms of "wastage".[41] But the decision about what types of tertiary institutions to support is obviously a political decision with substantial implications for budgets.

10.2 Would-Be Universities or Local Centres?

A second dimension of identity among tertiary colleges and institutes involves the nature of status battles and competition. In some countries, non-university institution clearly aspire to become universities, and they spend a great deal of institutional and political energy trying to become universities. Correspondingly, universities spend a great deal of political energy trying to prevent non-university institutions from taking over their "turf". In Norway, for example, three or four of the

state colleges aspire to become full universities awarding the master's degree, and they call themselves "university colleges"; the state colleges normally offer the *candidatus magisterii* degree taking 3 - 4 years, the same as the first cycle of university. In Germany there is keen competition by the FHS to gain university status, and they are trying to achieve this by establishing parity with universities in everything they do — for example, in salaries of faculty, hours of teaching, civil service grades of faculty, and access to research; the FHS have been given the right to translate themselves in English as Universities of Applied Science. In France the IUTs are Institutes *Universitaires* de Technologie, and while they don't aspire to become universities — they would then lose both funding and the right to have selective admissions – some of them are trying to lengthen their programs so that they can give the Matura, the equivalent of the baccalaureate degree in the Bologna process. On the other hand the efforts of tertiary colleges and institutes to become more like universities have generated opposition from universities. For example, the inability in Germany to meet the target of 40% of tertiary students in FHS (the proportion is now about 25%) has come partly from university opposition; in Finland the universities are currently resisting the polytechnics' role in research, as well as their proposal that students who receive a degree at a polytechnic should be allowed to continue in a master's program there; and the efforts of community colleges in the U.S. to offer baccalaureate degrees always encounters firm resistance from public universities. And some countries like Italy that lack non-university institutions have tried but failed to establish them because of the opposition of traditional universities.

In other countries — again Australia and Great Britain are the prime examples — tertiary institutes have been prohibited from even thinking about becoming universities. In England the distinction between *further* education including the FE colleges and *higher* education including all universities is a rigid and unbreakable boundary, though in practice local institutions have created articulation mechanisms facilitating transfer from *further* education to *higher* education. In Australia TAFE colleges are firmly part of the VET sector, with different funding and governance mechanisms, while universities are part of higher education. In France the IUTs and the universities do not really complete because they serve different groups of students with different goals, and similarly in Austria — where the reliance on consensus makes competition among educational institutions all but *verboten* — the FHS and the universities provide different degrees, in different subjects, to different groups of students. In Germany too, the dominant policy has been to equalize the quality of different institutions rather than allowing competition among institutions to exacerbate differences in quality among them.[42]

In between these two extremes there are tertiary colleges that have take different routes to identity. In Canada, and particularly in British Columbia, some community colleges now offer baccalaureate degrees in conjunction with local universities, allowing them to be called university community colleges — thereby enhancing their status. In the U.S. tertiary colleges have established articulation agreements with nearby

universities so that transfer into baccalaureate programs is all but automatic, and a college then becomes known as a "feeder school" into a university. However, the identity of a "feeder college" is not universally available; for example, urban community colleges with many unprepared students and low rates of transfer cannot be feeder colleges, and the alternative of creating a distinctive identity as remedial or second-chance institutions is not high status.

The effort to become universities by some tertiary colleges destroys the whole point of creating a differentiated tertiary sector, with institutions different from traditional universities. It's clear that the institutional incentives are to try to become the highest-status institutions, which are universities; but policy-makers who want a differentiated sector have carrots — funding, rewards for teaching well, funding for applied research — as well as sticks — like governance mechanisms, regulating what qualifications institutions can provide, specifying what credentials faculty have — to prevent tertiary colleges from becoming universities. Whether they can do this politically is, of course, another issue.

But a different tactic has been to abandon the drive to become universities, since that battle cannot be won (at least in some countries) and since an institution originating as a lower-level tertiary college would always suffer in competition with universities established for much longer periods of time. One clear alternative has been to develop into a local or regional institution that is distinctive from universities because it is more flexible; more responsive to local conditions including local labor market conditions; better at providing a wide range of programs including lifelong learning, training for employers, labour market programs, and adult or non-vocational education as well as conventional pre-employment preparation; better at moving research into practice including technology transfer, and at public service to local employers and governments; and better able to participate in local economic development. The attempt to develop comprehensive regional centres is characteristic of the Norwegian state colleges, the Finnish polytechnics for which developing a distinctive approach to tertiary education has been central, and the better community colleges in the U.S. and Canada. By devising a distinctive alternative to the university, these institutions can escape competition with better-established institutions; they can define their own conceptions of institutional excellence, rather than relying on conceptions already defined by others; and they can become distinctive parts of tertiary education rather than university look-alikes.

There have been, then, many different approaches to the question of identity among tertiary institutes and colleges, depending on the history of these institutions, on the constraints of governmental policy, and on the desires of students. From my own perspective, the most distinctive institutions are those that have developed a hybrid approach, allowing some students to treat these as educational institutions with a broad range of learning and a developmental focus, while others can attend for specific purposes including upgrade training and short courses. And those that have defined

themselves as comprehensive local or regional centres rather than small universities have a much better chance of defining a unique role within tertiary education, rather than remaining forever subordinate to universities.

11. CONCLUSIONS: DIRECTIONS FOR THE FUTURE

Even if forecasting is a risky business, the future of tertiary colleges looks good. The pressures to expand tertiary education continue to be strong in most countries, and much of this expansion has been and will continue to take place in tertiary colleges, partly because of their cost and locational advantages. Where these institutions have been recently established, they have grown remarkably over the 1990s; there is no sign of students "voting with their feet" and rejecting such institutions, even though a few countries — Germany is the prime example — have failed to meet their enrollment targets. We might expect other countries to establish such institutions — for example Denmark (which now appears to be starting the process of consolidation into a smaller number of larger institutions with closer ties to universities), Sweden with its unitary system of higher education, Italy that has already tried several times to establish such colleges, the countries of central and eastern Europe struggling to provide tertiary education and enough occupational preparation, transitional countries like China trying to prepare students for emerging labour markets and a range of modern occupations. Each of these countries has a different history and different education and training institutions, but the generic issues they face as they confront tertiary education ,in a period of time consumed by the image of the Knowledge Revolution, are similar.

In making decisions about tertiary colleges, all countries face a series of decisions and, inevitably, a series of trade-offs, some of the inter-related, some of them complex, and none of them having a "perfect" solution. While I have alluded to many of them throughout this report, it's worth repeating them to clarify these trade-offs and to outline some possible solutions. And surely countries are better off acknowledging these trade-offs, and discussing potential approaches, rather than acting without considering the full range of issues involved.

11.1 Targeting expansion vs. student choice

Countries can target the expansion of tertiary education in certain institutions like tertiary colleges — e.g., Germany with its target of 40% of enrollments — either by limiting places, or by manipulating costs and other conditions so that students "choose" certain institutions. The alternative is to rely on student choice to direct the composition of tertiary education, which itself requires that students be well-informed about the alternatives and that the conditions for attending are relatively neutral among institutions. The alternative to a policy choice versus student choice is supply-drive expansion, where the power of educational institutions themselves determines the

direction of tertiary education — and common though this is as a political matter, no country believes that these decisions should be made solely by the (sometimes self-serving) institutions involved.

11.2 Differentiation and Its Costs

The differentiation of tertiary education has usually been seen s a good thing, both providing greater choices for students and sometimes circumventing the weaknesses of the traditional universities. But differentiation often brings with it equity problems, as differentials in status and funding develop which then lead to students of different backgrounds being concentrated in different institutions. Differentiation also brings with it a lack of transparency, as the alternatives multiply beyond the ability of students, employers, and even policy-makers to understand the variations within tertiary education. Better information and greater accountability ma be helpful, but some costs of differentiation seem inevitable.

11.3 The Challenge of Multiple Purposes

The choice of providing tertiary colleges and institutes that have unitary versus binary versus multiple functions — in general, the issue of which functions these institutions should serve — is shaped in part by policy constraints, funding, and the culture (entrepreneurial or conservative) of tertiary institutions. Institutions with multiple functions like U.S. and Canadian community colleges can provide a variety of services to their communities and establishes bridges or linkages among them, but this often comes at the cost of less transparency, particularly for students trying to figure out what programs are most suitable for them. This is a particular problem in countries with many “experimenters” uncertain of what they should do, or where tertiary institutions assume incorrectly that student choices are rational and stable — in which case dropping out or switching major subjects or other forms of “wastage” may be high. The potential solution — more information and counseling — comes at some cost. In addition, comprehensive institutions may try to do everything, but nothing well, contributing to the diffuseness of these institutions; quality control mechanisms are potential solutions here, though quality assurance mechanisms are still in their infancy in many countries and have not worked especially well in any country.

11.4 The Dilemmas of Funding

Some constituencies for tertiary colleges — the institutions themselves, prospective students, faculty, the local communities themselves — surely prefer higher rather than low spending, but no country has limitless resources and the pressures for more tertiary education cut into their ability to increase funding per students. With lower funding comes, in many cases, lower quality an institutions that are more like trade schools; and dropout rates may also be higher as quality falls. Furthermore, any differences between tertiary colleges and universities in their perceived benefits will

also cause students (and faculty) to "vote with their feet" and leave tertiary colleges for universities, undermining the effort to differentiate tertiary education. So overall levels of funding as well as funding per student are crucial measures, with the ways of making funding more effective still largely unexplored.[43]

11.5 The Dilemmas of Equity

The expansion of tertiary colleges in many countries has provided more access o tertiary education for low-income students, sometimes women, minority students and immigrants, and other groups often left out of tertiary education. But differentiation also causes inequities as well, if some students are tracked into or "cooled out" into low-cost, low-quality institutions with no economic or intellectual benefits, or if they gain access to institutions with high dropout rates and low rates of completing qualifications. There are well-known solutions to each of these problems, but they often require greater spending, more careful attention to the process of supporting students through tertiary education, and in may cases some solution to the family-work-school dilemma.

11.6 Integrated versus Isolated Institutions

Another policy choice involves decisions about whether tertiary colleges should be integrated with other institutions or relatively isolated. The advantages of integration — with universities through transfer mechanisms, with labour market programs through transition mechanisms, with adult education, and sometimes with secondary schools to reduce the transition problems of moving from secondary to post-secondary education — are substantial. But coordination never comes free, and the costs of doing so include not only direct funding to accomplish such forms of coordination and integration, but also attention to the details in labour market programs and adult education, to encourage rather than discourage integration across a larger *system* of education and training.

11.7 Assuring Economic Benefits

Because tertiary colleges and especially institutes are so occupationally-oriented, a virtual requirement for their success is that they provide employment benefits to the students who attend. Of course, most countries do not have extensive policy controls over labour markets, and so they cannot force benefits to exist; but they can take steps to assure that information about economic benefits is collected and disseminated, that institutions target the appropriate occupations with promising benefits, to ensure that institutions emphasize qualifications with known benefits rather than creating new qualifications of unknown value, and to provide placement offices so that students can find related employment. These steps all cost additional resources, of course, and they may reduce the freedom of institutions to provide certain programs or of students to choose certain occupations— those of low employment and earnings levels, for

example. But in an occupationally-oriented system, any institution that fails to provide economic benefits is likely to find itself diminishing over time as students look elsewhere.

11.8 Enhancing the Quality of Teaching

While the quality of teaching in tertiary education has often been the target of criticism, tertiary colleges have some "natural advantages" — often small classes, faculty dedicated to teaching rather than research, greater use of individuals from industry with their up-to-date knowledge of occupational requirements, and sometimes greater use of work-based learning. The question is whether these "natural" advantages are enhanced, or whether under pressure to become more like universities teaching is again neglected. And while there is a broad variety of institutional mechanisms to enhance the quality of teaching, doing so requires making teaching a priority rather than something left to the whims of individual instructors.

11.9 Localism versus Globalism

While many universities serve national and international goals, most tertiary colleges have been created to serve local communities, both through teaching and research or public service. But if that is to remain a priority, then this may entail both appropriate governance mechanisms — ensuring that local interests are represented on governing boards — as well as specific funding if research or other activities serving local interests are to be carried out. And it may entail protecting these institutions from the some effects of globalization, including the efforts to ensure the flow of students among countries and the comparability of diplomas, if that would compromise commitment to local issues. Alternatively, it may prove possible to accommodate global pressures and still remain community-serving institutions, but that will require careful consideration of a range of goals.

11. 10 The Dilemmas of Identity

A final trade-off involves the ways of achieving a clear identity, for these tertiary colleges and institutes that inevitably complete with universities for public attention and status. Some countries have not been particularly clear about the roles they want tertiary colleges to serve: on the one hand they have tried to differentiate tertiary education, and on the other hand they have allowed these institutions to become universities in all but name, granting bachelor's degrees and even master's degrees and starting to specialize to attract a more national group of students. To the extent that tertiary colleges move towards universities, the less distinctive they become and the less differentiated tertiary education is. The goal of providing alternatives to universities necessarily implies either preventing tertiary colleges from becoming universities, or providing them with the funding and the freedom to create a distinct identity, different from the university, that is also a high-status identity (as the identity of a trade school is

not). The conception of a hybrid institution, serving many different purposes, is one that allows students to choose what kind of institution to attend to serve their own goals, and is both more flexible and more student-centered than colleges acting as small universities. But neglecting the issue of identity and the trade-offs implicit in it risks allowing the stature of the university to triumph over all other forms.

One final issue to confront is the nature of the Knowledge Revolution in different countries. The rhetoric about the Knowledge Revolution, the rhetoric I call the Education Gospel, always has an element of truth to it, but it also tends to be exaggerated. While the direction of change in favor of occupations requiring more schooling is surely correct, at least in the developed countries of the OECD, the speed of change is often exaggerated; for example, even in the U.S., with one of the most highly-developed systems of tertiary education in the world, only 22 percent of jobs by 2010 will require a bachelor's degree, with another 13 percent requiring some kind of sub-degree tertiary education — hardly figures that support a notion of College for All. The Education Gospel often acts as if there are substantial problems of under-education, whereas many countries experience a great deal of over-education, where individuals have too much education for the jobs they have. The naïve versions of human capital, assuming that all forms of education and short-term training have economic benefits, are demonstrably incorrect, particularly for short education programs and short-term job training, and the question of the precise conditions when occupationally-oriented education — particularly the new forms available in tertiary colleges — will generate economic benefits have not been thoroughly examined in many countries. The role of education in economic growth is almost surely exaggerated, at least for developed countries, since a great range of other policies and conditions — macroeconomic policies including monetary policy, regulatory policies, international trade agreements, labour market policies, political stability, private sector strategies, the presence or absence of severe shocks like wars — influence growth as well, and increases in education by themselves cannot force growth when other conditions are unfavorable. And the Education Gospel tends to emphasize the contribution of education only, neglecting the complementary polices — for example those that might resolve the family-work-schooling dilemma of many older students — that may also be necessary. As part of the process of considering the alternatives for the future of tertiary colleges, countries should also consider the assumptions underlying their efforts to increase different forms of tertiary education, and whether they are sensible or exaggerated.

The creation and expansion of tertiary colleges and institutes provides students, employers, policy-makers, and educators themselves with a greater range of choice, given various pressures for the increasing formal schooling. In the next few decades the questions for countries with such institutions – as well as countries contemplating reforming their tertiary education systems – is how to create the right balance among conflicting elements given the inevitable trade-offs involved, and given the needs of students, of employers, and of policy-makers representing national goals. In the end,

such choices can create strong institutions with their strengths and identity, and not simply small versions of universities.

Appendix 1 What to Call Them: Problems of Terminology

One of the dilemmas for those writing about non-university institutions is what to call them, since they vary so much. Indeed, the variation in terminology is an indicator of how much these institutions themselves vary, at least compared to universities. The early work of the OECD called them short-cycle higher education, and EURASHE calls then short-cycle tertiary education, but some of these institutions provide degrees requiring 3 to 4 years and don't seem very short. The 1991 OECD report called these alternatives to universities, and one might label them non-university tertiary education or NUTE , but it seems awkward to label something by what it is not. Haug refers to these institutions as tertiary colleges and polytechnics, the latter word following the conventional Finish translation of their Ammattikorkeakoulut, which is fine except that in many countries (the U.K. and eastern European countries) have had polytechnics that are much closer to universities. I have finally decided to use the term tertiary *college*, which is consistent with the terminology in most of the English-speaking countries and in Norway, and tertiary *institute*, consistent with the French IUTs and having the connotation in English of a technical or vocationally-oriented institution (like the Massachusetts Institute of Technology).

The official translations of these institutions are sometimes misleading. The Norwegian colleges are called *statlige hogskoler*, or state higher schools, but this is often translated as university colleges because a few of these are trying hard to become universities. The *Fachhochschulen* (literally higher-level schooling) in Germany and Austria have been given the right to translate themselves as universities of applied sciences, but this is also part of their effort to gain university status.

A related battle over terminology has been over what to call education after compulsory or secondary schooling.[44] The OECD has tended to use the term tertiary education, defined quite broadly to cover covers both institutions and courses (Alexander, 1998):

> A level of stage of studies beyond secondary education which can lead to a qualification on the labour market. It is undertaken in formal tertiary institutions — universities, polytechnics, colleges; public and private, but also in a wide variety of other settings including secondary school, at work sites, via free-standing information-technology-based offering and a host of private and public entities.

Others have referred to this level as post-secondary or post-compulsory. Sometimes the term higher education has been used, though often (as in the U.K., and sometimes in the U.S.) referring only to universities while tertiary colleges are excluded from higher education. In Germany and Austria both universities and FHS are included in higher education, while other offerings like those of the *Berufsakademien* and *Hohere Fachschulen* are described as part of post-secondary education but not higher education.

In other cases, however, higher education has been used synonymously with post-secondary; the EURASHE report, for example, defines tertiary short-cycle education as "all kinds of higher education not leading to a first (bachelor's) degree".

Just as the debates over what to call tertiary colleges and institutes are symptomatic of their variety, these battles over what to call post-secondary institutions is really a battle over status, reflecting the desire of some institutions (universities and would-be universities) to keep themselves apart from other lower-status institutions. In this report I use the terms tertiary, post-secondary, and post-compulsory as synonymous, and try to avoid the debates about what constitutes "higher" education since it seems so charged with political and status battles.

Appendix 2 Sources of Information

There's much less information in every country on tertiary colleges and institutes compared to universities. Often data on enrollments, completion, and other basic information are hard to come by, and more sophisticated research that examines analytic questions and causal mechanisms within these institutions is unavailable. However, there are a number of sources of information that are quite useful, though a more thorough analysis of these institutions would benefit from a full OECD thematic Review.

A great deal of information is available, for European countries only, from Eurydice, and specifically from a series entitled "Two Decades of Reform in Higher Education in Europe: 1980 Onwards", with reports for individual countries these are available at www.eurydice.org. Eurydice also has a Eurybase data system, with reports on education systems in all countries including a section on Higher Education, available at www.eurydice.org/Eurybase. Eurydice and Cedefop have developed a series on Structures of Education, Initial Training, and Adult Education Systems in Europe. None of these series are comparative. Cedefop also provides a variety of information on VET vocational education and training programs), but these largely ignore tertiary institutions even in countries where the bulk of vocational preparation takes place at the tertiary level, and where recent developments have replaced specialised secondary vocational programs by tertiary institutes. In addition, a great deal of information is available on the web; in many countries every institution has its own Web site with information on course offerings, enrollment prerequisites and procedures, costs, and provisions for foreign students; while these web sites are oriented to attracting students rather than providing information useful to research, these are still useful in providing certain kinds of information. Most national ministries of education maintain web sites providing information and data on tertiary education, some of this translated into English.

Two comparative studies are those of Huisman and Kaiser (2001), which examines 9 countries in Europe, and includes information on non-university sectors where they exist in these countries; and a recent report by Kirsch, Beernaert, and Norgaard (2003), sponsored by EURASHE (the European Association of Institutions in Higher Education), a group of non-university institutions. This study provides some information on virtually every country in Europe, in part based on questionnaires and in part based on experts; its focus is the inclusion of non-university institutions in the Bologna process partly , it appears, as a way of generating greater status. In addition, Adams (2002) has edited a volume comparing American and U.S. higher education, though focusing on universities. OECD has carried our reviews of the polytechnics in Finland (OECD, 2003); its forthcoming reviews of tertiary education in Switzerland and Denmark will include some information on the non-university institutions including the FHS in Switzerland.

Otherwise I have relied on a variety of information including studies available on the Web from the National Centre for Research in Vocational Education and other sources for Australia; Bailey (2002) for England, along with other materials from

government agencies; my own research on U.S. community colleges (e.g., Grubb, 1996 and 1999); information collected as part of the OECD reports of adult education in Canada and Austria, for which I was rapporteur. A variety of individuals provided their own insights including Richard Sweet, Barry McGaw, and Phillip McKenzie of OECD for Australia, Abrar Hasan for Finland; Marijk van der Wende for Germany, Patrick Werquin and Benedict Gendron for France, Bill Bailey and Geof Stanton for the U.K., Jan Schreiner Levy for Norway. Guy Haug was very helpful in providing information about various European institutions, including the role of the Bologna process (e.g., Haug and Tauch, 2001). None of these individuals are responsible for errors of interpretation, of course.

However, the process of learning about tertiary education in different countries is an endless one, particularly given the variation *within* countries as well as among them. It is impossible to carry out through reviews of the existing literature, since it is sparse in most countries, and it would benefit from a more substantial study including visits to individual institutions, as is typical in OECD's thematic reviews.

FOOTNOTES

[1] This view of education and economic changes has become common within OECD (see, e.g., OECD 2001, 2002, CERI 2001, and OECD (2002). A similar UNESCO position is Haggis, Fordham, and Windham (1993) and the World Education Report (2001). The European Union has joined this position by calling for a "Europe of Knowledge", as has the World Bank, and many individual country reports and commissions. For a partially critical view about the Education Gospel see Grubb and Lazerson (2004).

[2] See OECD (1998); in the U.S. context see Boesel and Fredland (1999) and Rosenbaum (2001).

[3] In my view, these institutions merit a full-scale thematic review. The process of an OECD Thematic Review entails studies of perhaps 8 to 15 countries, each of which develops a background report and is then visited by a team of experts for about two weeks, observing institutions and interviewing experts, administrators, and policy-makers. This is one of the few methods I know to carry out wide-scale comparative analyses in education.

[4] See, for example, Huisman and Akaier (2001), with their analysis of binary structures in 9 countries. The ISCED system of classifying educational institutions distinguishes category 5A, which includes universities, from 5B, which includes institutions described as shorter and more occupationally-oriented and therefore should include tertiary colleges and institutes. However, a number of the institutions described in this report, which are all shorter and more occupationally-oriented than universities, are assigned to 5A including the Fachhochschule in Austria, Germany, and Switzerland and the polytechnics in Finland.

[5] Some short programs are now merging into business colleges, and medium-cycle programs are merging into Centers for Higher Education or CVUs; see Kirsch, Beernaert, and Norgaard (2003), p. 99 on Denmark.

[6] Of course, to suggest three rather than two levels suggests that more than three levels may exist, particularly in a large country like the U.S. with a highly differentiated postsecondary system. However, more than three categories seems needlessly complex for analytic purposes.

[7] One large problem is distinguishing between counts of students based on enrollments, in which case part-time enrollment counts the same as full-time enrollment, or on the basis of full-time-equivalent enrollment, which does not suffer from that problem. Another issue is that enrollments in non-university programs lasting one or two years should not be compared with enrollments in university programs lasting three or four years; instead the numbers in comparable cohorts of students should be compared, though this is hardly ever done. The figures in Tables 1 and 2 should therefore be understood as very rough orders of magnitude.

[8] The U.S. examples can be found in Grubb (2003); the Burgenland case is in OECD (2003), Box 2.

[9] On the economic development and community development functions of community colleges, se Grubb, Badway, Bell, Bragg, and Russman, 1997). This report, which was

intended to describe the variety of activities in 7 community colleges, also illustrates why it is so difficult even to describe the magnitude of these efforts.

[10] For example, a team of researchers tried to develop a "map" of different forms of public service in 7 specific community colleges in the U.S., but were basically unsuccessful at estimating the overall magnitude of such efforts; see Grubb, et al. (1996).

[11] On the Canadian community colleges see the report of the Thematic Review of Adult Learning for Canada, OECD (2001); on U.S. community colleges see Grubb, Badway, and Bell (2002).

[12] The EURASHE report (Kirsch, Beernaert, and Norgaard, 2003) asserts that "transtion to degree programmes is relatively easy in most countries", but in fact this refers to country responses to a leading question about whether transition is easy or not, not on evidence from transfer rates. The report notes a majority of students transferring only in Bulgaria, Hungary, Ireland, and England and Wales.

[13] These are designated active policies to distinguish them from passive labour market policies that operate through transfers like unemployment insurance..

[14] When community colleges have operated these labour market programs, they have often done so in isolation from their "regular degree-oriented programs. The Workforce investment Act of 1998 is intended to follow a consumer-driven model, making institutional linkages more difficult, and most community colleges have withdrawn from WIA.

[15] This perspective — that resources and quality or outcomes are not directly linked, but depend instead on precisely how resources are used at the institution and classroom levels — is part of a perspective I call the "renewed" school finance, in the context of fierce debates in the U.S. about the relation between resources and outcomes; see Grubb and Huerta (2003).

[16] See, for example, the OECD (2003) report on Finland, which was able to address tuition costs where it might have been difficult for the Finns themselves to do so.

[17] There are innumerable technical details involved in creating a neutral tuition policy, which I would define as a situation where the negative effect of tuition net of grants and loans on the probability of enrollment is the same across income levels and between universities and colleges. This is only one dimension of the funding problem, the other being institution–based funding; again see Gallager (2003) for a comprehensive analysis.

[18] These patterns are also replicated for second-tier versus first-tier universities and elite universities compared to non-elite universities, indicating that all forms of differentiation create income or class-stratified patterns. On the large "structure of inequality" in U.S. post-secondary education, see Grubb and Lazerson (forthcoming, 2004), Ch. 2.

[19] The original statement of cooling out was that of Clark (1960). Dougherty (1994, Ch. 3) concludes that some students are "cooled out" from attending four-year colleges, while others are able to advance beyond high school through community colleges. My review of the evidence (Grubb, 1996, Ch. 2) concludes that advancement outweighs the effects of cooling out, and that by and large community college students would not

have attended four-year colleges. See also Rouse (1995) and (1998), who comes to the same conclusion based on statistical evidence.

[20] See Achtenhagen and Grubb (1999). For this review of pedagogy in occupational education we surveyed the literature in German and English, and tried to find literature in French as well. It's possible that there is more writing in languages like Norwegian, Finnish, and Dutch, but I suspect that the smaller size of these language communities makes the development of research and writing on occupational pedagogy difficult.

[21] There are methodological problems here. Ascertaining approaches to instruction normally requires observing in classrooms. But the kinds of policy oriented Thematic Reviews carried out by OECD do not typically spend much time in classrooms and usually interview administrators and policy-makers who are distant from pedagogical issues. Similarly, the efforts to describe the systems of education in different countries usually concentrate on formal legislation, the structure of institutions and qualifications, the progression through different layers of an education system, and issues of governance without mentioning institutional practices related to teaching. Therefore many of the systematic reviews of higher education systems simply do not collect much information about teaching.

[22] This is not the place to review the technical problems in estimating the formal returns to formal schooling. However, one large class of problems involves the failure to consider the effects of variables correlated with levels of education that may also influence earnings, and whose effects must be considered with regression or other statistical methods. These include such influences as gender, family background, race or ethnicity, ability as measured by various kinds of tests, labor market experience, local labor market conditions, and many less tangible characteristics like motivation and diligence. A second category arises from the fact that formal schooling is often measured in years of schooling or qualifications received, whereas the quality of schooling, its intensity, and other characteristics may be equally important. Then there are problems of self-selection, whereby individuals self-select themselves into occupations where they are more likely to do well, so that the match between occupational demands and individual preferences explains earnings rather than the education that may be formally necessary for employment.

[23] These are simple averages with no distinctions for gender, age or experience, race, family background, ability or grades, or the many other variables in well-controlled earnings equations like those cited for Australia, the U.K., and the U.S. The OECD staff does know which institutions were classified as Type A or B in these indicators, though supposedly country representatives tried as hard as possible to follow common instructions.

[24] See also some results for France in Giret et al. (2002) as well as Cereq Bref No. 195 (2003), more or less confirming the results in Table 4.

[25] See Dearden et al. (2000), Tables 1,2,5,6. These results are basically replicated by other data sets. These results, as well as the results for Australia and the U.S., are based on relatively well-controlled regressions, as distinct from the simple averages in the OECD and French data.

[26] See Ryan(2002a), Table A.1, and Ryan (2002b).
[27] I have summarized the academic literature based on large data sets in Grubb (2002a). In addition, there is now extensive information available based on data from Unemployment Insurance data, and these have been particularly valuable in shifting the level of analysis from the national level — which is, after all, not particularly useful for institutions or for students contemplating their local options — to the state and local levels; these are reviewed in Grubb (2002b).
[28] See Mayer, Mueller, and Pollak (2003), p. 23. The reasons for the higher rates of non-completion in universities is probably the fact that FHS are better structured than are universities so that students move through them in more regular ways. In other countries, however, the opposite is true; in the U.S., for example, many universities are more clearly structured than community colleges are. The extent of structure is of course one of many different factors influencing completion and "wastage".
[29] For the ambiguities in the dropout figures see OECD (2003), pp. 158 – 159. The difficulty of calculating an unambiguous dropout figure is common in most countries, because of the lack of longitudinal data that tracks students over time.
[30] See Berkner et al., Tables 2.1b, 2.3b. There has been a raging debate in the U.S. about whether individuals not completing degrees are really dropouts, whether they are "stopouts" who will later return to tertiary education, or whether they are completers in the sense that they have learned enough for a promotion or job change.
[31] To be sure, there is a similar problem with other Tier II institutions too: in the U.S., for example, many non-selective universities have completion rates between 30% and 50%, a problem that is seldom acknowledged.
[32] While there are substantial differences among provinces in Australia, the excellent HECS system of student loans is available only for university, not for TAFE colleges.
[33] In economic jargon, these are examples of externalities in education, and internalizing externalities is always a role for governments to play.
[34] The Bologna process is the attempt to implement the Bologna Declaration of 1999. A similar process, the Copenhagen process following the Copenhagen declaration of November 2002, may apply the same logic to vocational education, but this is likely to concentrate on secondary education and therefore not include tertiary colleges and institutes. The Copenhagen process assumes that the benefits of a European-wide labour market should be extended to the secondary level of vocational education.
[35] On the developments following the Bologna process, see especially the so-called Trends II report (Haug and Tauch, 2001), with a Trends III report forthcoming shortly from the European University Association..
[36] A new organization of tertiary colleges and institutes, the European Association of Institutions in Higher Education (EURASHE), has been pressing to be included in the Bologna process. See in particular Kirsch, Beernaert, and Norgaard (2003).
[37] The National Vocational Qualifications (NVQs) have been the target of considerable criticism, and indeed NVQ levels 1 and 2 appear to *reduce* earnings — violating the presumption "do no harm". See Dearden et al. (2000).

[38] As a small example, the OECD Thematic Review of Adult Learning in Austria found the universities consumed with the problem of conforming to the Bologna structure, and as a result much less interested in lifelong learning issues.

[39] This is surely a false dichotomy, particularly in Great Britain. While learning can obviously take place outside of institutions, particularly in auto-didactic forms of learning and informal learning, a system of education driven by qualifications (as in Great Britain) leads to learning taking place within formal institutions. Unless the assessment for qualifications can cover precisely what an individual needs to know — and that ideal is never attainable — then the quality of learning is partly a function of the quality of the institution, and the notion of funding "learning, not institutions"

[40] For an excellent example of a developmental perspective, see the Lifemap program at Valencia Community College in Florida, at www. This provides a developmental framework for virtually all elements of the college.

[41] One of the dominant conceptions of university completion is the U.S. is that or Tinto (1987), who has argued and shown empirically that student completion is a function of both "academic integration" — that is academic performance and progress — and "social integration", the ways in which students participate in the social life of universities. For any level of social integration to take place, an institution has to have some dimensions f an educational institution rather than being merely a trade school.

[42] See Adams (2000).

[43] The usual argument at this point is one to make tertiary education more efficient through the use of computer-based methods and distance education. This is not the place to review the literature on this subject, but my own belief is that the costs of such innovations have been under-estimated and their benefits grossly over-estimated, and that the real challenge is to learn how to integrate such innovations with face-to-face teaching rather than using them to displace such conventional instruction. In any event, I do not offer technology as the solution to issues of effectiveness.

[44] See also the EURASHE report (Kirsch, Beernaert, and Norgaard, 2003), section 2.2 on terminological issues. The authors end up using the ISCED classification, especially the 5B group, but they also use the European Union conception of ECTS credits to define short-cycle tertiary education as anything under the 180 credits need for a bachelor's degree. In practice, however, this report tends not to include tertiary colleges that I call Tier II institutions, like the German FHS, the Norwegian state colleges, and the Finnish polytechnics.

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