

A GLOBAL UNIVERSITY FOR A GLOBAL VILLAGE

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Abstract

The internet and educational reform efforts are creating a global network of universities. The ability of faculty members and students to communicate with each other independent of location has dramatically improved. In terms of administration universities still function as separate entities. However, efforts to share information and to collaborate on research and teaching now encounter few barriers once personal computers and networks are available. This paper reviews the technical, political, and administrative changes that have created this global system for learning. It suggests some implications for research and teaching, for individuals, institutions and societies. The paper also describes what universities and other organizations can do to strengthen and expand the global academic community. From a theoretical point of view the “global academic community” is compared with discussions of a “global brain.”

Keywords: global university system, internet, Bologna Process, exchange programs, service learning

Trends that are Creating a Global Network of Universities

James Carey was fond of referring to Harold Innis’s distinction between time-binding and space-binding cultures. (Innis, 1950, 1951) Both Innis and Carey expressed a strong preference for time-binding cultures that emphasize an oral tradition rather than space-binding cultures that emphasize a written tradition. But modernization with its emphasis on specialization has produced a society of specialists who seek to communicate with other specialists in the same field regardless of their location. In recent years the written tradition and its space-binding culture has been greatly enhanced by the internet. It seems unlikely that Carey would welcome this development without reservations. However, if the world has now become a global village, it also now has a global university. Surely Carey would welcome the possibilities for conversation, collaboration and sharing of knowledge and points of view among the parts of this distributed university.

As one indication of current changes, co-author Stuart Umpleby recently received the following email message from his university librarian.

I would like you to know about six databases to which the library has recently subscribed. All are available via the library home page from any computer in the known universe, provided there are no fire walls and the like at your end, to anyone affiliated with the university. (This does not include alumni.)

As Umpleby read this message he remembered Dorothy's statement in the movie *The Wizard of Oz*, "We are not in Kansas anymore." Computer and communication technology has dramatically altered the environment for academic work. Several trends are bringing the world's universities closer together. Most important, the internet makes possible very low cost collaboration among professors and students around the world. Because of the internet scholars now have much easier access to information via the worldwide web. Also, the internet creates the possibility for a faculty member to work with scholars anywhere in the world as easily as with colleagues on the same campus. Distance education classes via the internet bring together students and professors in different cities and even different countries.

Due to the internet there now exists a global network of universities. Not all universities are connected, and some make use of the internet more than others, but access is spreading rapidly. Costs are declining, which increases access. Furthermore there are advantages to distance collaboration:

- Time zone differences speed co-authoring,
- Collaboration among people in different countries introduces a comparative perspective in social science research, and
- Distance collaboration leads to sharing of research methods.

Figures 1 and 2 show how personal computers and the internet are spreading around the world. In a recent study data for thirty-six countries was clustered into nine regions (Umpleby, Lim, et al., 2005).

1. Africa: Democratic Republic of Congo, Ethiopia, Nigeria, South Africa
2. China
3. East Asia: Japan, South Korea, Singapore, Taiwan, Thailand, Vietnam
4. Europe: Finland, France, Germany, Italy, Luxembourg, Poland, Russia, Spain, Switzerland, UK
5. Latin America: Brazil, Colombia, Mexico
6. Middle East: Egypt, Iran, Turkey
7. North America: Canada, United States
8. Oceania: Australia, Indonesia, Philippines
9. South Asia: Bangladesh, India, Myanmar, Pakistan

Most of these regions contain both developed and developing countries. For example, Africa contains both South Africa and Congo. East Asia contains both Japan and

Vietnam. Europe contains both Germany and Russia, the UK and Spain. The Middle East contains both Turkey and Egypt. Oceania contains both Australia and Indonesia. And, of course most countries, particularly large countries, such as China and India (South Asia), contain both developed parts and developing parts. Although the regions have great diversity within them, it is striking how large the differences are among them.

In addition to technology other changes are occurring in higher education. The Bologna Process, by standardizing courses, credits, and degree requirements, is making it easier for professors and students to teach or study at other universities and to transfer credits (<http://europa.eu.int/comm/education/policies/educ/bologna/bologna.pdf>). Europe's adoption of a two-degree system (bachelor's and master's), rather than just a magister, will make it easier for students to get both a general education and specialized training.

Faculty and student exchange programs, such as the Fulbright Program and more recently the Junior Faculty Development Program, the Bradley Program and the Ron Brown Program, are producing an ever growing number of people who can serve as interpreters and communicators among societies. The number of exchange programs is increasing. The U.S., the U.K., Germany, and other countries fund university partnership programs, which are intended to start degrees, update curricula and/or spread more participatory teaching methods.

International travel makes it easier for people to meet to learn from each other and to coordinate teaching and research.

Reduced ideological competition due to the end of the Cold War has lowered barriers to sharing information internationally.

Other supporting trends, such as the widespread use of English as an international language, the globalization of markets and business operations, and the widespread desire for modern health care and entertainment also contribute to sharing ideas and innovations and create support for improving universities and expanding cooperation among them.

Strengthening the global network of universities can be expected to further several desirable goals. There will be improved international understanding due in part to expanded cross-cultural research. A more educated citizenry will create more stable democracies and help to reduce corruption. Economic development should proceed more rapidly since universities contribute to building a more skilled labor force. Of course, the disadvantage of accelerating economic development around the world, is that per capita consumption of resources will also increase. While developing countries are struggling to make the transition to rapid growth, "developed" countries have not yet made the transition to sustainability. The world is being converted to an ecologically unsustainable mode of production. However, we can also expect a faster rate of scientific discovery and technological innovation due to the larger number of scientists and engineers around the world. And successful innovations will spread more rapidly.

A few events that have been important in bringing together the global network of universities are listed in Table 1.

Table 1. Some key events in strengthening the global network of universities

1984	Soros Foundation established in Hungary
1987	“Erasmus” (EU program for university students’ mobility)
1990	First meeting of the Alliance of Universities for Democracy
1994	The internet becomes available
1994	U.S. Junior Faculty Development Program begins
1996	Baldrige Award for Education begins in the U.S.
1997	Salzburg Seminar Universities Program begins in Austria
1999	Bologna Declaration and beginning of the Bologna process

Alternative International Strategies for Universities

Currently international collaboration among universities is growing. An increasing number of universities are creating programs for their undergraduates to study abroad. Some overseas programs are operated by the home university. Some are exchanges between universities. Some universities use their home campus facilities in the summer for programs for students from other countries. Professors are increasingly writing papers with professors in other countries. Curriculum development programs provide an opportunity for faculty members to expand their international experience by traveling abroad to teach. Branch campuses of Western universities in other countries increase competition in higher education.

Probably every university is continuously engaged in an effort to improve itself, ideally faster than other universities, so that it rises in international rankings. As universities seek to find a niche that will yield a comparative advantage relative to other universities, one element in their strategies is how to make the best use of the possibilities now available via the internet. An increasing number of universities offer distance education courses via the internet to students at home and abroad.

The strategy a university chooses will depend on its conception of itself. Most universities think of themselves as brick and mortar institutions with a physical campus. Photographs of buildings are even more common self-descriptions than lists of degrees offered. However, a university could see itself as a global change agent, acting through teaching, research, and public service. Or, a university could try to be known as an institutional improvement facilitator – for businesses, government agencies, NGOs, and other universities. In a growing number of universities students contribute to the local community by engaging in service-learning projects with both local and international organizations (Cress, et al., 2005; Umpleby, 2005).

Interpretations of the Global Network of Universities

When people speak about a “global network of universities,” they may mean very different things.

- Some people refer to the hardware of the internet and distance education. This group is concerned with connecting universities to the internet and bringing education to rural communities.
- Some people refer to administrative issues, such as the Bologna Process – making it easier and less costly to transfer course credit, to standardize academic schedules and calendars, and hence to facilitate exchanges of students and faculty.
- Some people think about collaborative research by faculty members in two or more countries. The internet makes it far easier to co-author academic papers. Joint research is a way to diffuse knowledge, methods and skills.
- Collaborative education can take many forms. For example, faculty members in two or more countries may cooperate in teaching an on-line or partly on-line course.
- Another interpretation of a “global network of universities” is improving and strengthening each separate university by adopting best practices and using quality improvement methods (Umpleby, 2002).
- Some people may think that improving the global network of universities means adopting a more participatory style of teaching or increasing the practice of service learning and having universities be more involved in strengthening local organizations – businesses, government agencies, and non-governmental organizations. (Umpleby and Shandruk, 2003)

These different views of the global network of universities are not incompatible, but the emphasis is often different.

Increasing Funding for Universities

Universities are an extremely valuable resource for development. In addition to more complete integration into the global academic community, the main thing they need is money. For example, a professor's salary in the former Soviet Union in 2005 ranged from \$50 to \$500 per month. Professors often work two or three jobs and sometimes "sell grades" to feed their families. Students do not have enough money to buy textbooks or even notebooks. In Uzbekistan students live in dorms for free, but they receive only \$10 per month as a stipend. From this amount they must buy food, clothes, books, and school supplies. Parents cannot always contribute much money, since the average per capita income in Uzbekistan is less than \$400 per year or about a dollar a day.

Despite the central role of education in development, universities have not received much attention from organizations such as the World Bank. The World Bank, as a bank, makes loans, not grants. The money is supposed to be repaid. But what is the rate of return on an investment in a university? It is more long term than an investment in roads, dams, or even elementary education. Consequently loans to improve universities are rarely given

by development agencies. Nevertheless, there are several sources of funds for universities in addition to the usual state funding. The following steps can be taken to increase funds to strengthen universities.

1. Charge tuition. Tuition can be low at first. The main obstacle is the expectation of free education. If students pay for their education, they are likely to take it more seriously. Students who pay are also likely to demand better quality education. (Student government and a student-operated campus newspaper could be encouraged to champion student interests, thereby teaching skills of civil society.)
2. Begin an endowment. The major obstacle is tradition. A university can start a small endowment program and develop it over time. Local companies can be asked to endow a chair for a faculty member or a scholarship for a PhD student. A university should have at least one well-trained, full-time person working to build the endowment. At U.S. universities each school (business, law, medicine, engineering, etc.) has its own endowment staff. Some U.S. universities employ over 100 people working to build the endowment. Imagine how much money they must bring in each year just to cover their salaries! This is the competition for a university that wants to compete at an international level.
3. Submit proposals for research and curriculum improvement. Through the internet, faculty members in two or more countries can cooperate on doing research. So the pool of funding agencies is now international as well as national. Funding agencies in the future may state a preference for research with an international dimension. This requirement is particularly appropriate in the social sciences. Since faculty members in developing countries have lower salaries, there can be cost savings as well as sharing of knowledge and methods.
4. Support "observer consulting." What is meant here is a new kind of "consulting" work. For example, suppose the World Bank is building a road, a dam or a power station. A foreign contractor is selected due to superior knowledge and skills. One or more local civil engineering professors could be hired as "observer consultants" to learn and then to teach the new methods in classes. In addition one or more professors of sociology or anthropology could be hired as "observer consultants" to learn how the project affects people in the area. They would then use that knowledge in classes about the sociology and development of the region. Not only the World Bank but also businesses could hire professors as "observer consultants" to learn technical, management, accounting, human resources, and other skills. The benefit to firms is that in the future they would have better educated local employees. Paying the "observer consultants" would help to keep talented people in the country and working at universities.

Support for universities may increase in the future as governments and businesses realize that universities are the institution in society that learns and passes on what has been learned to the next generation. Supporting universities leads to more skilled managers and public administrators, engineers, lawyers, and doctors in the future.

Many new private universities are being established. An index of private, for-profit universities is growing faster than market indices, for example the Standard and Poor's 500 index. Hence, the capital markets are providing a way to raise money for universities. Private universities in developing countries, combined with international branch campuses of Western universities increase competition for established universities and thereby stimulate reform and improvement. "Corporate universities," another name for corporate in-house training programs, are growing even more rapidly. See Figure 3. Managers realize that a knowledge economy requires that employees continually upgrade their skills. So, salaries for professors, which are very low in some countries, should begin to rise.

Out-sourcing Teaching to Universities Overseas

The free flow of information has a twofold impact on the relationships among universities. On the one hand, the internet permits cooperation, giving professors from different countries an opportunity to share knowledge and conduct joint research. On the other hand, the internet allows universities to expand internationally, thus increasing competition among them. We suggest universities follow a strategy that will be beneficial for all parties – professors, students, the local community, and universities themselves.

"Coopetition" is a combination of two words: competition and cooperation. It describes a situation when competitors join forces in order to achieve better results. This term was introduced in the early 1980s and was developed in the 1990s both in the literature and in the business world (Brandenburger and Nalebuff, 1996). In coopetition competitors cooperate in order to share some resources, such library collections, and then concentrate more on their core competencies. More often "coopetitors" share intangible resources: knowledge, reputation – the kind of resources that do not diminish due to their usage.

The internet has enabled on line universities to increase the number of students rapidly. Online universities report steady growth in the number of distance students. For example, Laureate Education Incorporated showed a 60% increase in online education revenue in the first quarter of 2005 (Investsource, 2005). Currently online universities in the U.S. are growing mostly due to U.S. students. After the saturation point, when it is difficult to expand domestically any more, universities will likely follow the examples of multinational corporations and enter international markets more aggressively. Using present technology it is not difficult to provide on-line education to students in other countries. Some barriers may appear, but this is where international partners may help and offer assistance.

The barriers to entry into international distance education can be:

- Administrative (adjusting to local legislative systems and dealing with local governmental authorities),
- Cultural (adjusting curricula to local environments and adjusting to local educational practices),

- Linguistic (educating some students and faculty using the English language and then having them translate course materials into local languages), and
- Technological (providing international students with access to computers and the internet).

One way to overcome these barriers is for international distance education programs to have a local partner.

The most valuable resource that can be combined in an international partnership is faculty knowledge. Local faculty can provide their expertise in the field to adjust curricula to the local environment, to enrich courses both with theoretical developments and with practical examples. Local faculty can also translate courses into the local language to increase enrollments. And there is one more reason why U.S. universities may want to employ international professors in the future – cost minimization.

Currently U. S. universities employ adjunct faculty (part-time) to deliver online programs. This practice is cost-effective, since the wages of adjuncts are lower than the salaries of full-time professors. In some colleges an instructor receives less than \$1000 for a course without any benefits (medical insurance, pension plans, etc.). Although the compensation is low, the supply of adjunct faculty is still rather large, since many of these instructors teach in several universities at the same time (Adjunct Nation, 2005). Of course, the quality of such teaching is not high. But this situation may change since there is talk of a labor union for adjunct faculty. A labor union might raise the wages of adjunct faculty. If a union is organized, universities may consider employing faculty from abroad, after they have been suitably trained.

There are some successful examples of universities outsourcing abroad. Two examples are the University of Maryland University College (UMUC) in the U.S. and the University of Southern Queensland (USQ) in Australia. These two universities have a partnership with the Siberian-American Faculty of Management (SAF) at Irkutsk State University (Russia). UMUC has a 14 year history of relations with SAF. At the first stage of cooperation courses were taught in Irkutsk by American professors. Then half of the courses were taught online by American professors in the U.S. with the other half being taught by Russian professors in Irkutsk. As a second example, the University of Southern Queensland outsources tutoring to SAF. Courses are led by Australian professors. They provide syllabi and textbooks. They make and check the assignments. But lectures and consultations with students are provided by professors of SAF in Irkutsk.

The expansion of U.S. universities abroad benefits both students and faculty in other countries. First, students have more educational options to choose from. They have an opportunity to gain access to more advanced knowledge by taking a degree with a Western university. Second, faculty in other countries improve their skills and knowledge, thus improving the quality of education and research in their country. The faculty may also receive higher wages in comparison with their previous salaries. This has happened in the republics of the former USSR. The salary supplements make the profession of professor more attractive for young people. Third, collaboration between

universities in different countries improves the capabilities of non-US universities, allowing them to improve the quality of their educational programs and to develop their own on-line programs in the future.

The trend to outsource teaching could be particularly helpful to universities undergoing significant transformation due to the larger economic and political changes in the post-communist countries.

Structural, Staff and Process Characteristics of Universities in Transition

1. Progressive and conservative institutions

The universities of the former socialist countries have witnessed great changes in the transitions to democracy and a market economy but universities have not yet seriously changed. Despite the fact that many pro-democracy movements in these countries started at universities, and students were advocating radical changes, the universities as educational institutions remain in many respects as they were previously. Like many other socialist institutions, universities have undergone three major development stages during the last 15 years. In the beginning there was great enthusiasm and hope, followed quickly by a severe financial crisis and budget cutting. Several painful years of slight recovery followed, and today there is new hope, now linked with European Union membership and an expected rise in educational standards.

As a rule, top-down changes contain a lot of artificial elements, the easiest of which is the changing of names. It is not difficult to change the names of streets, university disciplines and courses. But do the contents of courses change? Very often the new names hide the old contents and beliefs. In general, academia has turned out to be one of the most conservative institutions. Universities are very slow to change.

2. Democratic organizations without professional management

Now universities have academic autonomy, which includes some democratic procedures like general election of the university president, deans, and department heads; staff appointments; introduction of new specialties and courses, etc. This autonomy, however, is restricted, first, by the budget, which must be approved by the Ministry of Education, and second, by the necessity to have ministerial approvals for many proposed innovations. Sometimes the procedures are cumbersome, especially in big universities, where several thousand representatives can hardly make meaningful decisions in the yearly general assemblies. Almost all universities lack professional management and managers. Faculty members chosen for managerial positions may be good teachers or researchers, but they often lack managerial experience. Usually they have to balance their new administrative tasks with their professorial duties, worsening sometimes the execution of both.

Inside the universities administrative and financial power is usually strongly centralized in the hands of the president and the administration, and many decisions are not transparent. This means that on the department level democratic procedures are transformed into cumbersome meetings, even though proposals made by those units, are completely dependent on the centralized budget. Office materials or computers sometimes arrive a year after they are ordered, if they arrive at all. For innovations to be realized, much time is required.

These structural shortcomings are worsened by slow changes in university staff competence and in their preparedness for the new realities. Because the transformation to democracy and markets was so quick and, in some sense, unexpected, many professors found themselves outdated and not qualified for the new requirements. The most difficult issue is that the staff, particularly professors in the social sciences, were trained under the old system, and there is nobody to replace them. Yet they are required to keep the system going, which means they are under great pressure to upgrade their curricula and teach themselves first. The existing opportunities for such upgrading are mostly for PhDs and young scientists, not for senior faculty, while at the same time the young are attracted very often by other sectors, and senior faculty stay and teach.

3. Universities in the new market circumstances

So far there is no consensus on what the democratic and market approaches to higher education should be. Introducing tuition in state universities does not mean automatically an increase of educational quality and compliance with new labor market demands, because the teaching is done by the existing faculty. Charging tuition may prevent many capable young people from studying, if the tuition is not accompanied by a well developed system of scholarship programs. At the same time state universities are exposed to increasing competition from the newly established private universities and branches of foreign universities. In many ways the new institutions seem to be more flexible, giving more choices to students. Also the new institutions often pay higher salaries to professors. Consequently, state universities can no longer rely on their old reputation. University staffs are seeking more autonomy, flexibility, and market oriented approaches. At the same time there is fear, mostly among older staff, of losing the State's guarantees and of being thrown into a competitive situation for which they lack even foreign language preparedness, not to mention other skills. This threat became visible and was felt more strongly with the achievement of EU membership. Presently state universities are experiencing high intergenerational tension, and academic careers are still not the preferred choice of capable students.

4. Old structure of professors' initiatives

In addition to the specific difficulties related to the transition period, universities in the post communist countries are not safe from the common challenges of educational trends. Teaching requires that professors are not only aware of the latest scientific developments, but that they are able to select, structure, organize and present them in an appropriate way. They need to pay attention to the skills students need today, what will be necessary

for them tomorrow, and how to prepare them. Here lies one of the biggest contradictions between the two sides of professors' work as teachers and researchers. This contradiction is more profound in the former socialist countries, because of the relatively low staff compensations. On the one hand, they are paid for a fixed amount of hours per year that they have to teach. (The latest trend is to increase this amount.) On the other hand, their scientific career depends mainly on research contributions, as indicated by publications. Less attention is paid to the quality and methodology of teaching, because the structure of incentives is oriented mostly to publication activities. Due to low salaries many professors are compelled to teach additional courses in other universities, for example in the newly established private universities, which often lack qualified staff. This dispersion of intellectual energy helps some people to maintain their living standard, but definitely does not contribute to improving the quality of their teaching or research activities. One of the reasons for this situation is that obtaining feedback from students is a rare practice, and comments usually focus on the basics, for example whether students are given a course syllabus and whether professors attend all lectures and seminars.

5. Unclear teaching methodology

One of the most important things to be changed in university education is the *teaching methodology*. The lecture was a predominant teaching instrument in the past, and it still persists. Professors were viewed as people who possess the truth in each instance, but these views are changing already. In the past exams could not be passed if the answers were not in accord with the professors' opinions or books. In the new market economy some teachers have started to advise students to buy only their writings. All these practices are in sharp contrast with global educational values. They need to be overcome, but radical transformation can be expected only with generational change in the teaching staff. Certainly more international co-operation will help. The students themselves have to adapt gradually to new teaching methods.

The discrepancy between modern and traditional styles of teaching is strong even in the field of business studies. In this field interactive ways of teaching and learning have been developed over many years. Group discussions, teamwork, and brain-storming are among the best known methods. Their use, however, requires considerable preparatory work by teachers. They have to review and analyze many case studies, simulation games, tests, etc. in order to choose those which can work in the specific setting. Here again we are facing the usual impediments: lack of up-to-date teaching resources and relevant case studies; bad structure of incentives for teachers, etc. When the staff is motivated mainly to produce publications, there is little willingness to spend time on interactive materials for classes.

6. Impacts of the internet revolution

The other force with great undermining potential for changing the university system is the recent developments in computers and communications, especially the Internet. For example, libraries now need to subscribe to databases. A complicating factor is that students are often more familiar with using the internet than are professors. The world

wide web has made vast new sources of information available, which calls for radical changes in professors' role as teachers. *They are no longer the primary source of knowledge.* This means that they have to develop the capacity to orient students toward relevant sources of information. They have to become themselves part of the virtual networks of scientists in their fields. They also need to change their perceptions about the learning outcomes they are hoping to achieve.

7. Necessity of increased international cooperation

There is already pressure from the new private sector and the labor market to align university education with their needs and requirements. The accession to the EU brings new challenges from the more competitive foreign universities. The fast changing global environment calls for changes. At the same time, the university system remains untransformed. University administrators are still looking mostly for quantity augmentation (more faculty, more students, etc.) in order to require more money from the State educational budget, while the new realities call for more specialization and differentiation. Great discrepancies are emerging among universities and the units inside them. Some faculty members are more aware of the new situation and fight for (or at least strive to create) qualified staff and improved curricula, while others lag far behind.

Because of the lasting centralized decision power in the universities, faculties and individual professors often look for other ways to improve their professional quality and reputation. This is the "bottom up" approach, which seems presently to be the most effective. It counts exclusively on *international cooperation* in its two dimensions: strengthening the institutional and teaching capacities of the respective faculties. The most fruitful initiatives were and still are support for curricula design, establishment of mutually recognized and accredited programs, cooperation among research centers, and sharing teaching with guest professors.

Based on the above considerations, most universities in the former socialist countries need important restructuring in terms of their goals, structure, management, curricula, staff preparedness, teaching tools, and social networking. There are already proven models and methods from business management, which could help with this restructuring. Universities could benefit greatly from the new opportunities for cooperation with more developed higher educational units abroad, particularly through the internet.

Conclusion

Metaphors help us to make sense of the world (Lakoff and Johnson, 1998). A common metaphor for the internet and its use is a "global brain" (Russell, 2000; Goertzel, 2002). A "global university system" is an alternative metaphor for the implications of the internet, at least as it is used by academics (Rossman, 2005; Varis, Utsumi, Klemm, 2005). The advantage of the global university metaphor is that in a university the elements are autonomous, reflecting human beings. A university aids the education and

development of both individuals and society. The “global brain” metaphor, on the other hand, calls to mind a single reasoning organ in which the elements (neurons) are not autonomous. Using a social system metaphor rather than an organismic metaphor calls to mind multiple descriptions and interpretations of phenomena and discussions to resolve differences. Another metaphor would be society as a university seminar. Already high school students join chat rooms, use instant messaging, build websites, search the internet and share links, just as do scholars in universities. Scholars and the general public are using the same means of communication. With articles and links so easy to share, the quality of public discussions may rise.

As people increasingly understand and make use of the opportunities created by new technologies and the global network of universities, the rate of improvement of social systems may rise. However, James Carey would no doubt point out that similar claims were made for earlier communications technologies with positive consequences overestimated and negative consequences largely unanticipated. He would urge restraint in predicting an Earthly utopia.

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Figure 1. Number of PC Users

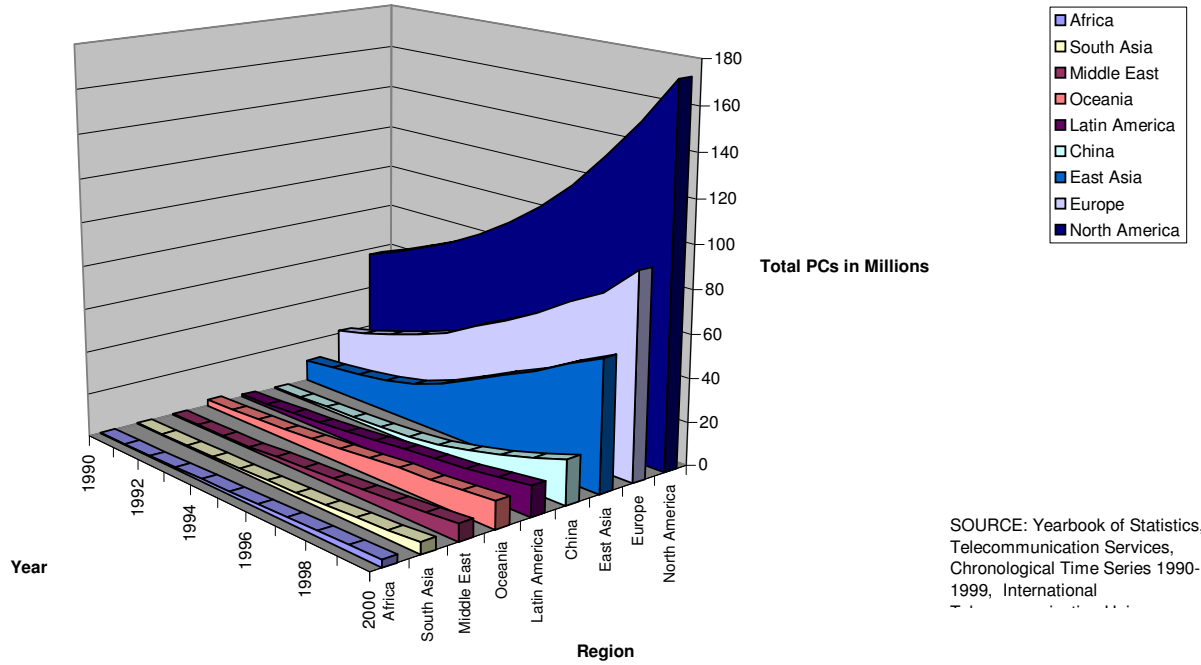


Figure 2. Total Internet Users

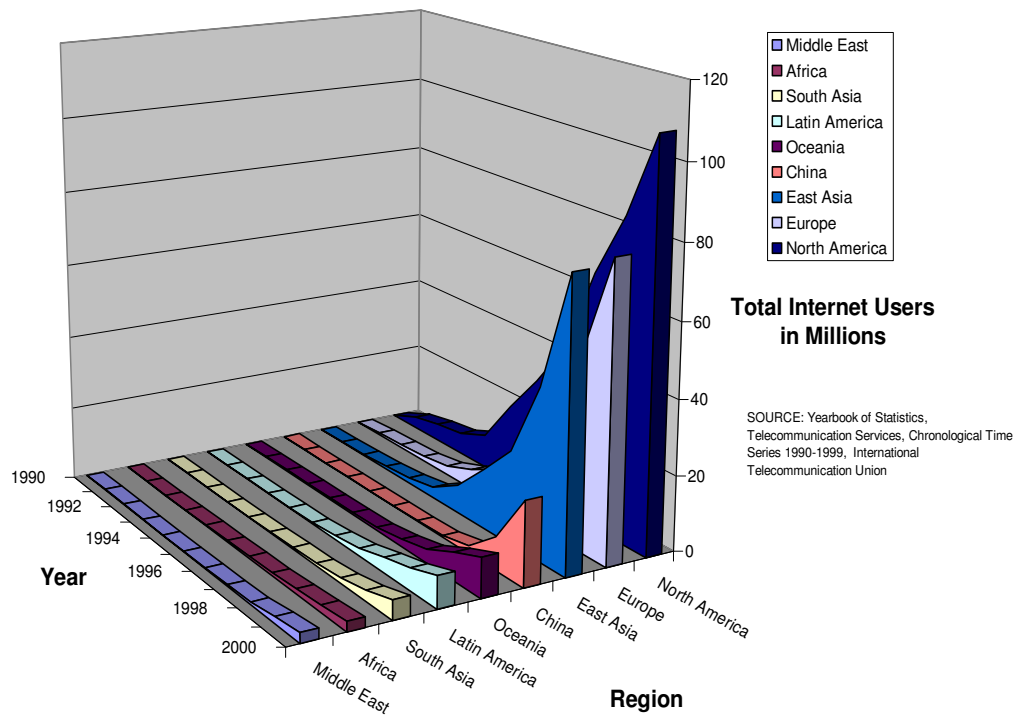


Figure 3. Age of Corporate Universities

