



Competition and Cooperation

The Need for a Dual Approach by Luc Weber
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Imagine for an instant that you are the president or rector of a research university in North America or Western Europe. You are well aware that the world of today is increasingly global and competitive, as well as driven by knowledge. In particular, you are observing that the countries that are now emerging so rapidly, in Asia and in other regions of the world, have realized a crucial point: in order to prosper, it is not enough to build on huge masses of cheap—but relatively unqualified—labor; they need to develop the knowledge economy by way of large investments in education, higher education, and research. You begin to understand that these countries are becoming competitors for talent, as they attract back or keep their best citizens. You are also aware that they will be “producing” many more well trained specialists than the “old world,” which has been dominating the knowledge production and transfer scene for centuries. You foresee, therefore, that the emergence of these new economic and political powers will increasingly threaten the relative standard of living of the developed world.

As university president or rector, you are particularly sensitive to the fact that research universities, as well as specific research institutions, are not spared the profound transformations that are taking place in the world. In fact, you are even contributing significantly to these changes according to the mission of your institution. Your institution is also challenged by the changes affecting the higher education and research system itself, in particular the increasing competition for talented teachers and students at national and international levels, the increasing cost of research and of training graduate and doctoral students, and the over-regulation and under-funding of higher education and research by governments that makes it difficult for institutions to make strategic changes. In addition, if you are the rector of a European university, you are confronted with the Bologna Process, the vast pan-European undertaking aiming at creating a European Higher Education Area of 47 countries. To comply with the decisions of the European education ministers and your national authorities, by 2010 you have to restructure all the study programs according to a harmonized model in order to facilitate the mobility of students and staff and to increase your attractiveness to non-European students.

You believe that the most challenging question for a university president or rector is to envisage the best strategy to promote the development of your institution or even to secure its existence. But should your institution deal with the competition alone or should it collaborate? Obviously, competition and cooperation are permanent characteristics of humankind. Nevertheless, the increasing competitive climate might lead you to believe that competition is reducing the degree of cooperation because cooperation would be less desirable or more difficult. Even if there is no standardized measure of the degree of competition and cooperation, we can observe that on the contrary, these two phenomena are positively linked through some invisible system of action and reaction.

This observation is far from new: the creation of a world military alliance against Nazi Germany in World War II or of the North Atlantic Treaty Organization (NATO) as counterpower to USSR after the same war are among the most striking examples of responses to military competition and threats by cooperation. Another salient example is the creation of the European Economic Community in 1957 (now the European Union) to prevent the risk of a new war between European countries and to promote various collaboration between member countries. Cooperation is also an important strategy in the business world to reduce the pressure of competition. It can take various forms, for example, research collaborating at the pre-competitive level, collaborating at the level of product distribution, absorbing a competitor to gain market shares and reduce the pressure of competition, or contracting secret agreements to avoid costly price wars.

Universities, and in particular research universities, as well as national university systems, are confronted with similar challenges. In order to play the role expected from them, they should not only respond to the competition which is becoming increasingly global but should also cooperate more intensively to face the challenges of competition. If competition and cooperation are both part of a global strategy to adapt to the changing world and, better, to contribute to this change, there is nevertheless a systemic difference between them. Competition is the normal state of affairs that every individual, enterprise (private or public), and nation has faced since the memory of mankind, whereas cooperation requires a voluntary decision to join forces with a partner or partners in order to improve the impact and efficiency of a specific activity. As we shall demonstrate later on, the necessity for an organization to collaborate whenever it is adequate and possible to lessen the pressures of competition and to increase their capacity to compete originates from two facts: first, it is extremely difficult to escape from competition, and second, competition threatens the existence of any organization that does not adapt to its changing environment.

Gains from Competition

World rankings of universities show a clear link between the relative success of a research institution and the degree of competition it is exposed to. The greater the climate of competition, the more attractive institutions have to be in order to maintain or improve their position as a leading institution. The most crucial point for an institution is its ability to recruit excellent people and to offer them the right working conditions. This is true for faculty, which not only should be innovative scientists, but also good research team leaders and stimulating teachers, capable of attracting promising new students and of instilling in those students the desire to learn more. The quality of an institution also depends strongly on the quality of its students, as this quality determines the level of difficulty for a course and the innovation potential at Masters and PhD levels. Traditionally, US universities try to be attractive to students in order to increase revenues. For that, institutions have to pay attention to the coherence of programs, the completion rate, the quality of their facilities, and the academic support provided to them, as well as to the promotion of their name by various campaigns or athletics. The attractiveness of an institution also depends greatly on its ability to raise money to finance the infrastructure, the research projects, and the grant programs for meritorious students. Last but not least, the degree of institutional autonomy plays a crucial role. Those institutions that are free to choose their students, staff, teaching and research programs, organization, and leaders generally do much better than those facing political micromanagement on a daily basis, as they are clearly responsible for their quality and capacity for change.

The fact is that a high degree of competition between research universities contributes to improve their performance in research and teaching. An interesting indication for this is that European universities, which were competing on an equal level with their American counterparts in the fifties and sixties, have not been able to keep this envied position later on, as they have become more protected and financed independently from their performance. One of the reasons is that European universities are, in general, more strongly impregnated with an egalitarian attitude, which is positive but has a cost in terms of lower performance as a place for scientific innovation.

The beneficial impact of competition can also be observed in the emerging world. The 2008 academic ranking of world universities compiled at Shanghai Jiao Tong University demonstrates, for example, that in nations newly founded, politically stabilized, or opening to the world after World War II like Israel, Singapore, South Korea, South Africa, and China, one or more universities are now ranked between 100 and 200 (even better for the Hebrew University of Jerusalem), a remarkable achievement considering the short period of time. This phenomenon reveals that the willingness to compete at a world level and the heavy investments in higher education and research have been valuable drivers of improvement. It will also be interesting to see in a few years if the heavy investment in higher education and research made in Qatar, the United Arab Emirates, and Saudi Arabia will be as successful.

Limits of Competition

Competition is indeed stimulating for research universities and for all its actors. However, the invisible hand of competition does not take into account the fact that markets can fail. The most important source of market failure is the existence of external economies: higher education does not profit only those participating, but also all those who, for one reason or another, did not go to college. The same is true with research; very few businesses will invest heavily in basic and free research, as it is quite unlikely that they would receive a positive financial return from it. The consequence of external benefits is that the collective return on investment is greater than the sum of the individual returns. The imperfection of information also prevents markets from producing an optimal solution: few citizens are aware of the high return of individual investment in higher education. Higher education institutions—public and nonprofit, and to a lesser extent, for profit institutions—also satisfy collective needs. They advance the culture and functioning of a society, thanks to the application of the rule of law, to values such as tolerance, and to a rational approach for problem solving. Totally free markets driven exclusively by competition are unable to spontaneously internalize these external benefits; therefore, they are providing a quantity of education inferior to the collective interest. This is why governments have a public responsibility to set up the framework of higher education and research and should largely pay for it. Note here that the legal status of an institution does not make an important difference. In particular, both well-known and lesser known private, non-profit US institutions defend basically the same traditions in education as the public ones.

Research universities, whether public or private, have a unique responsibility to society. They not only have to be responsive to the changing needs of society and the economy, but they are also responsible for leading the society forward. They should be both critical and supportive in preparing students for the society they live in and in contributing to solve societal problems. No other institution—state, enterprise, or media—can count on so many qualified people and enjoy as much of the institutional autonomy that is so indispensable for assuming this unique responsibility.

But are they doing enough? Obviously, research universities provide the best education possible and are pushing forward the frontiers of knowledge. However, they are also partially victims of the competitive environment. First, they tend to be primarily—if not exclusively—interested in curiosity-driven research at the frontiers of knowledge, as it is the main stake of competition and the “royal” way for researchers to gain international reputation within their disciplinary community. Consequently, the results of interdisciplinary research focused on societal problems are less likely to be published in first-class periodicals; this creates a problem for young researchers who must develop their scientific reputation to have a better chance to be recruited in a research university or laboratory. Second, the development of contract research contributes a

welcomed collaboration with industry and helps research institutions raise additional funds. However, this development also leads to the threat of causing a departure from more interesting scientific research and breaching the practice of widely publishing the results of research, as this practice would be at odds with the necessity for businesses to exploit their intellectual property. The United States in particular is facing serious difficulties with the implementation of the Bayh-Dole Act. Conceived to protect the intellectual property of research institutions, this act has induced universities to become extremely aggressive in their attempts to raise funding from large corporations, with the double consequence that the results of research become proprietary and significant legal disputes are raised over intellectual property ownership.

The stronger the competition, the more likely it is that competition will become destructive. Such a behavior has been clearly identified for politicians, whose horizon does not go over the end of their mandate or the mandate of those who are in power, and business, which is encouraged by the financial market to follow short term strategies. Research universities also are not immune to such deviations. This is why it is so important that their leaders make sure that their institution behaves in accordance with its unique position and exercises its responsibility toward society.

Gains from Cooperation

Market failures and some disruptive secondary effects of competition at the institutional level justify the state's exercise of its public authority to ensure institutions act in a responsible manner. However, increasing competition is also compelling research institutions and, by extension, the system to which they belong, to develop specific strategies of cooperation in order to respond to the challenges of competition. The stronger the competition, the threat to be overtaken, or even to disappear if one cannot match the challenge, the more indispensable it is for a research institution to join forces with partners to reinforce itself. This necessity was identified long ago by industry, notably in Japan, where firms traditionally collaborate amongst themselves and enjoy the support of the government at the level of pre-competitive research. Why should research universities not do the same? The pursued objective can change from a mere defensive attitude of protection to a proactive one. For a research institution, as for the system at national and international levels, the ultimate aim is to increase influence, efficiency, and attractiveness.

he most fruitful cases of cooperation exist when the following conditions prevail. First, even if it goes far beyond the realm of research universities, cooperation is not only fruitful but is a necessary condition when a situation of indivisible supply prevails, that is when the facilities necessary to do a specific research or provide better information or new learning facilities is so enormous that it cannot be set up and run by a single institution or nation. The European Organization for Nuclear Research (CERN) in Geneva, the world's largest particle physics laboratory, is an excellent example of cooperation that has become truly global. This multibillion dollar project was possible only due to the financial and scientific participation of 20 member states and to the collaboration of many others. If CERN is a joint research facility set up at the governmental level, the Google library project aiming at putting tens of millions books online is a joint venture between a huge corporation, Google, and many university libraries, mostly in the United States. In both cases, as well as in many similar ones, the research, information, and learning potentials are fostered by a collaboration which makes possible something that could not have been possible without collaboration. Research universities have become, according to the trends of a more open society, both producers and consumers of the new facilities or services.

Second, cooperation is also justified when it helps improve the critical mass of the institution or subdivision in charge of an activity, principally in allowing the sharing of cost over a larger amount of actors or beneficiaries. For example, when universities develop and run a library management system or e-courseware, the number of beneficiaries can be greatly increased with small additional costs when the cost of development or implementation is shared between a greater number of promoters.

Third, the collaboration between two or more institutions can contribute to a better division of labor between them. By reinforcing the strong elements and reducing or eliminating the weak ones through a process of transferring responsibilities and staff between the collaborating institutions, each institution manages to focus on what they do best and to abandon to others the activities at which they were at a disadvantage. Switzerland offers excellent examples of such collaborations. Thanks to agreements between the Federal Institute of Technology in Zurich (EPFZ) and the University of Zurich or between the University of Geneva, the University of Lausanne, and the Federal Institute of Technology in Lausanne (EPFL), specializations are divided and costly equipments are shared. This kind of cooperation explains partly why Switzerland enjoys one of the most efficient research systems as measured by the ratio between research output and research budgets.

Fourth, cooperation serves to foster the advantages of complementary competences. In pooling together some or all of their forces, complementary institutions can take advantage of the different human competences and scientific facilities existing at the level of their cluster. It facilitates narrow or broad multidisciplinary approaches that have become the best source of new knowledge in science and the only valid approach to develop solutions for societal problems. European institutions are becoming particularly active in this field in reaction to their decreasing competitiveness. Some initiatives are spontaneous, such as the merger in the UK between the Victoria University of Manchester and the University of Manchester Institute of Science and Technology in 2004. Others are a response to governmental policy. In the framework of the German initiative to promote research and encourage the emergence of "elite" universities, the Karlsruhe University of Technology is presently merging with the independent Research Centre Karlsruhe. In France and Belgium, various universities located in the same city or region are presently working on a full merger. Moving from the institutional to the international level, fostering

complementarities is also the objective of the Bologna Process, whose ultimate aim is to take advantage of the wealth of diversity in the continent by encouraging the mobility of students and staff among institutions from different countries.

Last but not least, development aid has established itself as another form of collaboration. Emerging countries and their institutions of higher education have greatly relied on both technical and financial aid from development agencies like the World Bank, specialized governmental departments, university organizations, and individual institutions. Such support in developing countries where the capacity of the higher education system is generally lacking can be motivated by solidarity and altruism, but it also answers the desires of universities seeking to develop new business by either providing distance education or establishing subsidiaries in those countries. Australian, US, and British universities in particular have been the most dynamic on an individual basis or through a consortium. Interesting enough, these same countries are making specific efforts to attract bright students from developed and developing countries in order to provide them a quality education, but also to keep for themselves the most talented students for further studies or for their labor market, a practice contributing to brain drain. However, today the most successful institutions in emerging countries manage to attract back fellow citizens educated in the developed world by offering them attractive positions. As mentioned in the introduction, this “brain loss” may reduce the innovation capacity of the old world.

Whatever its justification as identified above, increased cooperation can occur at different levels, from the institutional level to the international one. It can also take different forms. At the institutional level, it can take the form of a light collaboration agreement linked with a research project, or at the other extreme, of a full fledged merger whose aim is to internalize forever the advantages of cooperation. The scope of the cooperative agreement, as well as the degree of obligation for the signatories, depends basically on the potential to gain from greater cooperation. This potential comes mainly from the objective of cooperation, the institutional characteristics of the possible partners, and their preoccupations and ambitions. For projects aiming at a division of labor between institutions or their merger, the success of the initiative will also very much depend on the ability of the promoters to push forward a project which is bound to raise great resistance in a sector characterized with little hierarchical power, great independence, and a particularly severe sense of ownership. Governments can also play an important role, namely in initiating and funding large projects involving a great number of actors or in being ready to cover the inevitable additional costs of a project aiming at new structures. However, recent developments show that private firms can play a role today at least as important as governments, as demonstrated by the Google library or the human genomes project. Governments should also be conscious that their political micro-management or wrongly conceived incentives can lead to wrong decisions.

On another dimension, collaboration can take place at the local level between research universities ready to share resources and to broaden their reservoir of competences, or at the global level between teams of researchers working at great distance on a specific scientific question. In both cases, the motivation for cooperation originates mainly from the research teams’ being convinced that joining forces is the best or even the only way to progress. But collaboration does not take place exclusively between research universities. University-industry collaboration has been rapidly increasing in importance over the last two decades, first in North America and now increasingly elsewhere. This collaboration takes the form of a greater division of labor between fundamental research done at the university level and applied research mainly done in industry, although the latter is more frequently contracting out part of its applied research. Successful cooperation has increasingly taken the form of a triangle “state – industry – academia,” by which the state fixes broad objectives and allocates funds to firms and research universities or laboratories to encourage their collaboration. This triangle model is, for example, the strategy set up by the European Research Framework Programs, which promotes collaboration in research between universities and businesses from different European countries.

Conclusion

Reading this paper in the mind of a university president or rector might have convinced you that, contrary to what one would imagine at first, the present climate of increasing competition does not reduce cooperation between research universities. On the contrary, you are discovering that more competition calls for even more cooperation. Indeed, competition does promote better performance, but only under some conditions or up to a certain limit. Market failures make it justifiable for the state to exercise its public responsibility to ensure that higher education and research are subject to competitive rules. Research universities themselves have the responsibility to take advantage of their unique characteristics to be responsible toward society. To respond to the strong competitive pressures, it is also imperative for research universities to cooperate in order to be stronger together than alone, such that they can improve their influence, efficiency, and attractiveness. Cooperation can take many different forms, from light agreements between local institutions or research teams working at distance to setting up large research organizations at the international level. As there are good reasons to believe that competition will still increase in the next future, in particular due to the continuing development of very large countries, improved cooperation is bound to become the best solution for research universities of the “old world” to keep their leading position and thus contribute to securing the high standard of living of the developed countries.

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