CHAPTER 3

The Future of Universities — Academic Freedom, the Autonomy of Universities and Competition in Academia revisited

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INTRODUCTION: UNIVERSITIES UNDER ATTACK

Over the last 50 years, universities and tertiary education have experienced a remarkable, unprecedented expansion. Europe, the continent with the oldest universities, provides a case in point: Before World War II, only around 150,000 students were enrolled altogether in the U.K., France and Germany (Hobsbawm, 2013, p. 2). Nowadays, the area of London alone has more than 360,000 students ("How many students are there", 2013/2014).

A key characteristic of (most) universities is a strong commitment to research and, in particular, basic research as a defining core activity. In this sense, the modern university follows Humboldt's ideal of unifying educating and researching. Further characteristics which I will discuss in more detail in part II are (i) that academics enjoy a large degree of "academic freedom", (ii) that universities are autonomous institutions in many respects, and (iii) that competition and peer review are key elements of the research process.

The current university can be and is often seen as an outstanding success story of an institutional development. However, recently, universities and the university system face a worldwide wave of criticism and attack. Some critics, like Barber, Donnelly and Rizvi (2013), even argue that the university as we know it may not survive in the future (p. 9). In my contribution, I will deal with this criticism and the demands for change at universities, concentrating on those which concern research activities at universities.

The following examples from all over the world illustrate the criticism of the research activities and research performance of universities:

- In October 2013, *The Economist* ran a cover story on "How science goes wrong", providing various arguments which indicate that the quality of research in science is flawed (p. 11; p. 21ff). According to the article, "there are errors in a lot more of the scientific papers being published, written about and acted on than anyone would normally suppose, or like to think" (p. 21). Concerning biomedical research, the article even concludes that the (public) research process at universities (and, for that purpose, non-university research institutions) "seems to have failed" (p. 21).
- The Research Excellence Framework (REF) in the United Kingdom, the successor to the former Research Assessment Exercise (RAE), uses — as one criterion to assess the quality of research at U.K. higher education institutions — the impact arising from excellent research: Impact concerns "any social, economic or cultural impact or benefit *beyond academia* (emphasis added)" ("Decisions on assessing", 2011). The assessment of impact will enter at a 20% weight in funding decisions for U.K. universities, beginning in 2014 ("Decisions on assessing", 2011). The REF approach to assess research performance on the basis of impact beyond academia has been severely criticized, not surprisingly, by academics in particular (Oswald, 2009, para. 1f.).
- In March 2013, the U.S. Senate passed an amendment which prohibits "the use of funds to carry out the functions of the Political Science Program (. . .) of the National Science Foundation" (Consolidated and Further Continuing Appropriations Act, 2013, amend. 65). The only exceptions are research projects that "the Director of the National Science Foundation certifies as promoting national security or the economic interests of the United States" (Consolidated and Further Continuing Appropriations Act, 2013, amend. 65). This so-called Coburn amendment drew strong criticism from many academics, especially from the American Political Science Association (Stratford, 2014, para. 7). It is interesting to note that the Coburn Amendment only applied to the 2013 NSF budget, but is no longer

part of the 2014 spending bill that the U.S. Congress passed in January 2014 (Mervis, 2014, para. 5). In a similar vein, House Representative Lamar Smith has frequently criticized the funding policy of the NSF (Mervis, 2015, para. 1f.). Again, this has given rise to a heated public debate about research funding policy in the U.S.

- In December 2013, the American Studies Association (ASA) endorsed a resolution to boycott Israeli academic institutions. The boycott is understood as "a refusal on the part of the ASA in its official capacities to enter into formal collaborations with Israeli academic institutions" ("What does the boycott", n.d., para. 4). The decision of the ASA has drawn massive criticism by many academics, university presidents and academic organizations (Schmidt, 2014).
- In Canada, scientists protested against the government in autumn of 2014, blaming Prime Minister Stephen Harper for leading what has been labelled a "war on science" (Macdonald, 2014), as federally employed scientists are laid off and funds are cut or programs cancelled that interfere with the government's position on environmental issues. In addition, the allocation of funds is questioned by academics who observe that a decreasing number of members of the scientific community are part of the bodies who decide on funding — and thus political instead of scientific reasons being the driver in these decisions (Macdonald, 2014, para. 7).

These examples represent various strands of criticism of research activities at universities. In particular, they concern the assessment of research ideas and research projects, the quality of research, research topics, the sources of research funding, and international collaboration in research.

Of course, some of the criticism can easily be dismissed as purely political in nature or as an attempt to politicize the universities' policies. But, nonetheless, the extent and the breadth of this critique indicate a (novel) scepticism and mistrust concerning the performance and activities of and at universities.

In what follows, I will analyse why this scepticism has arisen. In part II, I will first discuss the particular merits of the modern university system and then turn, in part III, to potential reasons for critique.

THE MODEL OF THE MODERN UNIVERSITY

The current university system entails certain stylized features; most importantly:

- Academics at universities (professors and to a lesser extent, junior staff or other academic staff members) enjoy a large degree of independence in terms of the research topics they pursue, the academic views they

express, and the way they teach. This is often referred to as "academic freedom", although the exact meaning of this term is subject to debate. But it is clear that the idea of academic freedom of the individual academic is at the heart of the idea of the modern university.

- Universities are autonomous in their decisions, to a large extent. For example, universities independently appoint new members of faculty or, at least, exert strong influence on appointment decisions. Universities also have, at least to a certain degree, discretion over the range of academic subjects taught at their institution. In addition, the modern university system is also characterized by a large degree of independence concerning the day-to-day management of academic and non-academic issues.
- A large part of the research funding is granted on a competitive base where the expected scientific outcomes of a research project are the key criterion for the funding decision. Peer review is the main instrument to make these funding decisions.
- Universities compete with each other in many respects, e.g. for funding, students and academic staff. For instance, one feature of the university system is that a university hires, often at considerable cost, a professor from another university to strengthen its academic performance. It is interesting to note that, from a national (or social) point of view, the movement of an academic to another academic institution may only create a minor net benefit. But this highlights that competition, even if it involves considerable cost, is a key pillar of the university system. This holds true even in pure public university systems, as, for example, in continental Europe. I will return to this below.

Reflecting on these characteristics, it is important to bear one caveat in mind. While the universities in many countries, especially in North America and Europe, have much in common along the lines discussed above, there exists, of course, a lot of variation across countries and institutions which deserves some comment. For instance, the autonomy of universities significantly differs between private and public universities. Even among public universities, the degree of autonomy can be very divergent. Public universities face very different regulations of their activities concerning, for example, salary levels for faculty, property investment, student admission and the choice of academic subjects. It is also interesting to note that governance structures within universities show remarkable variation. For example, the distribution of powers can be quite different resulting in highly-decentralized or centralized decision-making processes. A study by the European Universities Association (EUA) further analyses university autonomy at European universities (Estermann & Nokkala, 2009).

Most importantly, the degree of academic freedom is often significantly endangered or even non-existent. A particularly worrying case arises when academic freedom is de iure granted, but de facto suppressed.

With these reservations in mind, I would nevertheless argue that the considerations mentioned above capture, in an admittedly very stylized way, some key features of the current university system which has evolved over the last 100 years, with much of the significant expansion arising after World War II.

Let me now turn to the question why the university system has developed in this particular way. And what are the perspectives for the future? How should the universities respond to the global challenges and criticisms mentioned in part I?

I will try to sketch an answer to these questions which puts particular emphasis on the role of competition. Of course, this approach reflects my *déformation professionelle* as an economist, and many of the arguments I will develop have been elaborated on, in particular, by economists like Aghion, Dewatripont, Hoxby, Mas-Colell and Sapir (2008). Let me begin with what can be seen as conventional wisdom: Research at universities is a key driver for innovation and growth, though it should be noted that this conventional wisdom has not gone undisputed. For further reference, see also R. E. Lucas (2008). In this view, the results and insights of basic research — inventions in Schumpeterian terms — while offering little direct economic benefit, form the base for — again Schumpeterian — innovations of new products and new processes. From a somewhat idealizing perspective, the university system can be seen as a mechanism to generate new inventions, new scientific ideas and results. This mechanism is based on competition and peer review. Researchers (or a team of researchers) with new ideas can apply for funding to further explore these research ideas. In a competitive peer review process, those projects are picked out and will be granted funding which have the potential to be the scientifically most promising and interesting prospects. The results of research are then published, often again on a competitive base with peer review, and thus become available to the scientific community and the general public. There is an ongoing academic debate at conferences and in journals which continually evaluates and assesses the scientific impact and quality of scientific results. In this way, particularly important scientific results are identified and the path and direction of future research are shaped.

Before discussing the potential flaws of this idealized setting, it is interesting to note that, from an economic perspective, the university system provides an ingenuous solution to an inherently public goods problem. Invention, scientific ideas and the results of basic research offer little direct economic benefit for the inventor. Therefore, no private company, no investor will — in general — finance inventive activities and basic research. However, the results of basic research offer potentially large benefits, sometimes in the far-distant

future when inventions are taken up and transformed into new products, processes and other innovations. Thus, inventions and basic research are a prototype example of what economists call a (pure) public good. A (pure) public good has two basic features: First, additional users cannot be excluded from using the good and, second and more importantly, additional users can use the good at zero (marginal) cost (Oakland, 1987). Like other public goods, basic research and inventive activity require public funding. It is a matter of ongoing debate whether this (necessarily) implies (exclusive) funding by the government (Oakland, 1987). The crucial aspect, however, is that the university system generates research und invention in a competitive way such that efficiency is enhanced and the cost of the research process to society are minimized. Note that this competitive element of the university system is a unique advantage in the provision of the public good basic research. For many other public goods, like roads, public transport, or national defence, the efficiency of the provision often suffers from the lack of competition. To sum up, one can say that the university system offers a particularly efficient solution of creating inventions and progress in research to society.

But what is the specific role of universities in this context? Of course, a key role of universities and their academics lies in higher education. But universities also provide and supplement the framework for competition in research in important respects: Universities offer employment opportunities for academics who can advance their academic careers by their academic performance. Thus, it provides an additional incentive for successful research activities. Furthermore, as was mentioned above, universities compete for academic staff. The "arms race" between universities trying to attract the best academics worldwide is often complained about, but it adds an important dimension of competitive pressure improving the overall performance of the higher education system. The competition between universities, for example, in terms of rankings and funding adds another element of competition.

Another interesting aspect to consider is the idea of the comprehensive university covering as diverse subjects as humanities, science, medicine and social sciences. One rationale for a comprehensive university is, of course, to fully use the potential for interdisciplinary collaboration between different academic subjects. But, from an economic perspective, another effect of a comprehensive university is to introduce competition within the university, where departments, different academic subjects and fields compete for funding and support by the university. The competitive pressure to further improve the academic performance of, for example, a department is thereby further strengthened.

Moreover, one may ask: What is the role of humanities (and, to a large degree, social sciences as well) in this competitive framework? Of course, humanities as a discipline play a crucial role in improving our understanding

of society, history and culture. The contribution of humanities is, thus, best understood as a direct benefit to society which, of course, also represents a public good and requires public provision. Again, the university system provides a framework to nurture the academic debate in the humanities in a competitive and efficient way.

Finally, one may note that academic freedom — at least in the sense that academics enjoy a large degree of independence in pursuing their research — and the autonomy of universities are key elements of the competitive mechanisms provided by the university system. Academic freedom and the autonomy of universities are often seen as privileges granted to universities and their academics. However, from the perspective developed in the previous paragraphs, these privileges are not granted per se, and, in this sense, are not privileges at all, but are based on a clear rationale: Academic freedom and the autonomy of universities are key pillars of the competitive mechanism to enhance the productivity of the research process in society.

So far, I have drawn a rather bright picture of the current university system. It is now important to add some caveats and to discuss potential points of critique. To begin with, the idea that competition and autonomy are well suited to organize the research process in society, and thus, to provide the public good inventions is based on an analogy to the efficiency enhancing mechanisms of competition in markets for private goods. While an analogy may offer attractive and, at face value, plausible implications, it is only a mere sketch and does not substitute for a rigorous analysis. While empirical evidence shows that competition and autonomy improve the performance of the university system, it is nonetheless possible, at least in theory, that there may exist other mechanisms with better outcomes (Aghion, Dewatripont, Hoxby, Mas-Colell & Sapir, 2009). To my knowledge, this issue has not been comprehensively analysed yet, only certain aspects of it; Aghion, Dewatripont and Stein (2005), for example, demonstrate the efficiency-enhancing effects of academic freedom.

Second, it is useful to note that the university system involves quite significant cost to society. For example, the "arms race" between universities in filling academic positions is costly, while the net benefit to society may be quite small. Even more importantly, the peer review mechanism to allocate research funds can be very expensive and can produce significant transaction costs in terms of the overall efficiency of the research process. These transaction costs reduce the net benefit for society from basic research; and the higher they are, the less attractive is a mechanism where the research process is based on peer review.

Another important caveat arises from the impact of new developments on institutional settings. New technologies, fundamental changes in the nature of the research process, and new ways to communicate may render the current

system of universities outdated or may require significant changes. The recent debate on MOOCs provides another example in the field of higher education for the potentially far-reaching consequences of such changes. Below, I will discuss the problem of the "burden of knowledge" (Jones, 2010, p. 1) and increasing globalization as specific examples of a significant change in the research landscape.

Bearing these admonitions in mind, I would nonetheless argue that the current university system with its key features — academic freedom, autonomy of universities, competition and peer review — has provided a highly successful model to organize (basic) research and higher education. While there may be theoretically and conceptually better models, the current system at least deserves the benefit of the doubt. Therefore, one is surprised by the above-mentioned global wave of criticism and mistrust universities face today. I will now turn to the question how one can explain this criticism, where the critics may be wrong and where they may be right, and how universities should respond to it.

WHY HAVE UNIVERSITIES COME UNDER ATTACK?

There are several ways to explain and to understand the current global wave of criticism of universities. First, one can see it as just one particular point in the regular ups and downs of public perception of universities. From this perspective, there is little to worry about, and one only has to wait for the next wave in the news cycle which will normalize the public debate. Another, more serious approach is to analyse each specific piece of criticism in detail and to try to assess its significance and its potential consequences for the designs of the university system.

In this paper, I will explore a third route: The university system as we know it has certain weaknesses and faces significant challenges in the future. Much of the criticism of universities mentioned in part I can be understood and appropriately analysed in terms of these weaknesses and challenges. This approach also allows identifying potential remedies and reforms.

I begin with the following issue: At the heart of the current university system is the idea that basic research and innovations at (research) universities are a key driver of innovation and growth. It is a matter of debate whether this view holds true for the past, as Phelps (2013) critically assesses. However, several empirical studies show a quite significant contribution of basic research to economic growth and productivity. For example, a recent study by Goodridge, Haskel, Hughes, and Wallis (2015) estimates for the U.K. the social rate of return of basic research at 20% (p. 5f.) However, even if basic research has made a significant contribution to economic well-being in the past, it is not clear that this will continue to be true in the future. The eminent economist

Robert Gordon (2012) has recently argued to the contrary. In his view, (highly-developed) economies like the United States can expect only little growth and few benefits from inventions in the future (Gordon, 2012). His conclusion is based on three key observations: First, in historical terms, (per capita) economic growth is not the rule, but the exception. From 1300 to 1850, economic growth was very low and almost close to zero (p. 4). Second, growth significantly picked up after 1850, reflecting, according to Gordon, the impact of the industrial revolution (p. 7ff). However, and this is his most important point, growth in the U.S. started to continually decline in the middle of the last century (Gordon, 2012). Gordon's interpretation of these facts is that many innovations enhancing growth in the past represent a unique type of progress which cannot be repeated in the future. One example is the development of travel speed. While travel speed has significantly increased due to the invention of trains, then of cars, and finally of airplanes in the last century, it has stagnated (or even fallen) in the past decades (Gordon, 2012, p. 11).

Thus, Gordon's (2012) analysis suggests that, in the future, inventions and innovations will do little to increase economic growth. His views have, not surprisingly, been criticized on various grounds. A lively summary of this debate can be found in *The Economist* ("Growth"; "Has the idea machine", 12 January 2013). Furthermore, the MIT Committee to Evaluate the Innovation Deficit (2015) provides an analysis of several examples for potentially high benefits of future basic research ranging from Alzheimer's disease to batteries. One argument of the critics is the difficulty to predict the path of future innovations; the notorious example of the Roosevelt Commission represents a case in point (Boulton & C. Lucas, 2008, p. 8). Concerning the benefits of basic research and inventions, one also has to take into account that, even if the impact on growth and job creation is small, basic research may yield important benefits for the well-being of the society. For example, progress in medical treatments may have little consequences for growth, but may significantly improve the welfare of patients.

But Gordon's analysis highlights an important point: Some of the recent debate on the contribution of research projects to society's welfare can be understood as a demand of the public to better understand the (potential) benefits of basic research. These demands become more urgent (and more understandable) if the prospects of basic research become more uncertain and more difficult to identify. Universities, the academic and scientific community, and research policy, therefore, have to face the task to better explain the role of basic research to a public which, simultaneously, is asked to provide a huge amount of resources for that purpose.

A second challenge for the university system arises from the breath-taking expansion of research activity and research output. In the 1950s, less than 50,000 journal articles were annually published worldwide across all fields

of science, engineering and social sciences (Jones, 2010, p. 2). In 2013, the number of published articles amounts to more than 1.4 million ("Trouble", 19 October 2013, p. 23). This raises several issues. The huge expansion in the stock and the new production of research results creates the phenomenon of the "burden of knowledge" (Jones, 2010, p. 1). Each potential researcher has to spend considerably more time on learning and taking stock of the existing results of previous research. This tends to negatively affect the incentives to take up a scientific career in important respects. A related point is that the expansion of the knowledge frontier and of worldwide research activity requires an increasing specialization of the individual researcher. However, increasing specialization makes the decision to enter a career as researcher more hazardous. Increased specialization is also one key driver for the significant increase in team production in research: The mean number of authors in science and engineering papers has continuously grown from around two in the 1960s to more than four in the new millennium (Jones, 2010).

All these developments raise important issues for research policy. But one particularly important aspect is how the rapid expansion of research affects the quality of research. The above-mentioned article in *The Economist* ("Trouble", 19 October) reports some alarming facts: According to sources quoted in this article, it is probably "hard to reproduce at least three quarters of all published bio-medical findings" (p. 21). Another worrying item of information is that one third of the clinical trials financed by the National Institute of Health (NIH) did not result in any publication within more than four years after completion ("Trouble", 19 October, p. 24). In addition, the article quotes evidence which indicates that a large part of published papers have serious statistical flaws (p. 21ff.).

One much discussed recent example of errors in an academic project concerns the work of Carmen Reinhart and Kenneth Rogoff. In their paper "Growth in a Time of Debt" (2010), they identified a critical threshold level of public debt of 90% of the GDP (p. 7). If a country's debt level is higher than this threshold level, economic growth is significantly negatively affected (Reinhart & Rogoff, 2010, p. 2). This result has been referred to in many policy debates in Europe and the United States. However, the conclusion of this paper has been severely criticized by economists from the University of Massachusetts Amherst who claim that the Reinhart & Rogoff paper contains several flaws and errors (Herndon, Ash & Pollin, 2013, p. 14f).

These criticisms of the quality of current scientific research require careful consideration because they can seriously undermine trust in research policy and research at universities. The critique clearly indicates the need to improve the peer review process both at research funding institutions and at academic journals. As *The Economist* acknowledges, several measures have already been taken on: For example, programs now exist to support studies which try to

replicate results of existing studies ("Trouble", 19 October, p. 24). Similarly, scientific journals increasingly try to improve the standards, for example, in terms of availability of research data ("Trouble", 19 October, p. 24). But there may be considerable room for further improvement. For example, Jones (2010) suggests that the increase in teamwork in research should be accompanied by the introduction or intensification of the use of teamwork in the evaluation of research ideas for, e.g., research funding (p. 29). He also highlights the complexity arising from evaluating research ideas along these lines: While evaluation teams should be highly specialized in the field of consideration, initial evaluators defining and approaching these teams have to be generalists with far-reaching expertise (Jones, 2010, p. 4f.).

But improvements in the quality of research may not only require changing review processes, but also altering incentives for researchers. For example, Jones (2010) argues that, due to the growing significance of teamwork in research, prizes and awards like the Nobel Prize or the Fields Medal honouring individual researchers should be transformed into awards honouring teams of researchers (p. 25f.) Furthermore, the quality of research may be enhanced if advances in academic careers depend on the fact that researchers also undertake a significant number of replication studies (Jones, 2010, p. 25f.). To stimulate original, novel research, the design of research grants is also crucially important (Jones, 2010, p. 21). For instance, empirical evidence suggests that grants with rather long-term funding and few strings attached enhance creative research outcomes (Azoulay & Graff-Zivin, 2012, p. 8f.).

To sum up, the huge expansion of research activity and research output requires increasing efforts of universities, research funders and research policy to maintain and improve research quality. This represents an important challenge since the future of the current university and research system critically depends on the credibility of, and the public's trust in, the quality of the research process.

I will now turn to another aspect concerning the huge increase in research activity and research output: Basic research (and higher education as well) today is a global activity. The same is true for the modern university. Among the top 100 or 200 in global university rankings such as the Times Higher Education World University Rankings 2014-2015, the Times Higher Education World Reputation Rankings 2015, and the Academic Ranking of World Universities 2014, there are very often many universities from North America, but from Asia, Europe and Australia as well. Nowadays, academics (and students) move globally from one country to another and across continents. Similarly, the competition for new ideas and new results in research goes on at global level.

The benefits of basic research accrue globally, as well. Thus, the insights of basic research or, more generally, new knowledge, represent what is called

a global public good (Stiglitz, 1999, p. 308). The global character of the public good basic research raises several issues. A global public good requires an international coordination of research policies if an efficient provision is to be achieved. Purely national research policies will lead to an inefficient outcome since, at the national level, only the national benefit and cost are accounted for, while the impact of a nation's basic research on other countries tends to be ignored (Stiglitz, 1999).

The foundation of the European Research Council (ERC) can be seen as one important step of coordinating research policies at the European level. Another step represents the recent activities of networks of research universities like the League of European Research Universities (LERU) to improve cooperation and the exchange of ideas ("International Collaboration", n.d.). But further progress is needed to fully take account of the global nature of basic research.

One worrying aspect is that some of the recent criticisms of universities can be seen as an attempt to shape research activities at universities in terms of specific national interests, opposed to a truly global perspective. For example, if research projects have to calculate the potential contribution to social benefit in a funding proposal (Norrie, 2012, para. 1; 3), one can expect national funding agencies to prefer projects with a high national benefit and not necessarily those which offer a high global return. From a global perspective, this induces a serious distortion of research activities.

Similarly, national interests may dictate research policies to define particular research areas like life sciences or "great challenges" like ageing on which research funding is concentrated. Again, this may divert from a truly global evaluation of the benefit and cost of research activities.

To sum up, basic research as a global public good requires an improvement in the international cooperation in research policy. Understanding the truly global nature of academia is, in my view, far more important than attempting to calculate the economic or social impact of research activities at the national level.

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