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1. Changes and Challenges

Since the late 1980s, Europe has been witnessing dramatic changes in its political and economic map. And still Europe is experiencing an unprecedented pace of social, environmental and technological change in which the economic paradigm will change fundamentally: While the manufacturing base will continuously shrink, future growth and social welfare will rely increasingly on knowledge-intensive products and services. More and more, the anticipation of technological and economic success affects the choice and direction of research. At the same time, there is a growing need for problem-oriented, inter-, and trans-disciplinary approaches in science and engineering, as well as in the social and human sciences. Hence the quality and accessibility of new knowledge as well as relevant research and technological development are decisive for the future well-being of our societies, it is crucial to increase investments in knowledge production, in particular in the training of young researchers who are going to be tomorrow's leaders, not only in academia, but also in the political arena, and in the corporate world.

The ongoing transition in the international division of labour from hands, tools, and machines to brains, computers, and laboratories, the increasing importance of electronic communication for international networking and the financial constraints in the public domain make it imperative for any funding institution to review funding modes and institutional structures and to rethink and realign its approaches. This applies to the European Commission, to national agencies, and also to private foundations.

Some of the major changes include:

- a change from traditional ways of acquiring and producing information to the digitalisation of knowledge;

- a turning away from predominantly disciplinary structures towards problem-oriented, trans-disciplinary approaches;
- a move from bi- or tri-lateral internationalisation towards global approaches and strategic alliances in higher education and research;
- a move from input-related planning processes towards output-oriented assessments in priority-setting; and
- a changing public/private interface, with important consequences for the division of labour in RTD systems.

2. Institutional Responses

As a consequence of this crucial development, the European Union has vowed to develop into a knowledge-driven society and to create a European Research Area (ERA) following the Lisbon European Council in March 2000 which had set out a daring strategic goal for the European Union, namely to become the most competitive and dynamic knowledge-based economy in the world by 2010. The Council made a commitment that “research activities at national and Union level must be better integrated and coordinated to make them as efficient and innovative as possible and to ensure that Europe offers attractive prospects to its best brains and to achieve this objective in a flexible, decentralised and non-bureaucratic manner”. Two years later, in March 2002, the Barcelona European Council Presidency Conclusions called for the adoption of the Sixth Framework Programme and its legal instruments, and for an agreement “that overall spending on R & D and innovation in the Union should be increased with the aim of approaching 3 % of GDP by the end of 2010” – an ambitious goal in view of the present 2 %.

In a report presented at the end of last year, a High Level Group assessing Europe’s progress towards realizing the Lisbon strategy that was chaired by Wim Kok, the former

Prime Minister of the Netherlands, clearly stated that so far there has been “disappointing delivery” of the strategy due primarily to a lack of determined political action, because the agenda has been overloaded, coordination has been poor and there have been conflicting priorities. Europe seems to be caught in a vicious circle: Over the last four years, the Kok report states further: The overall performance of the European economy has been really disappointing. The economic upturn in Europe

has been much weaker than in the United States and Asia, in part because of continuing structural weaknesses, and in part because of the fact that the rate of growth of public and private demand has been low, in particular in Germany. Due to these structural weaknesses in many member states, the overall economic performance has been poor and consequently it has been more difficult to implement the Lisbon strategy. It has also been harder in this low growth environment for some governments to keep their commitments to increase investments in university education and research activities by at least four or five percent each. Obviously, after reading the Kok-report, there is no reason for complacency, but there should also be not too many reasons for complaint. Even if it seems to be clear that Europe will not be able to achieve most of the Lisbon and Barcelona goals by 2010, the goals themselves are still expedient, and Europe-wide action towards them is needed more than ever before: In order to overcome our weaknesses, but also to build on our strengths.

Nevertheless there is a clear discrepancy between the rapidity of technological and societal change and the slowness of the institutional responses in research and higher education: this applies to the European as well as to the national and regional levels. Overall European Universities and research facilities remain fragmented between and even within countries. The higher Education sector is still largely insulated from industry and unattractive career patterns encourage young talents to seek independence and rewarding salaries outside the EU countries.

In many of our research systems a structural conservatism of institutions, processes and funding modes prevails. Over-regulation of university life hinders curricular reform, interdisciplinarity and efficiency. Apart from a few research areas such as astrophysics, space research, nuclear physics and molecular biology Europe is constantly loosing ground in the field of basic breakthroughs. Thirty years ago, European scientists dominated the Nobel Price lists. Today the laureates come mainly from the USA.

3. Public-Private-Partnership

Until the 1970s and early 1980s, there was to be a dividing line between publicly financed universities and research institutes -- dedicated to the creation of new knowledge as a public good -- and industry, which was to produce marketable goods

financed by private capital. However, the interface between domains which have been publicly financed, and those which have been part of the private sector is becoming blurred, as both shift towards a stronger involvement of private sponsors. Policy makers and university rectors are stressing the need for new 'public private partnerships', and are practising new modes of financing, involving linkages between publicly financed universities and research institutes and privately run research laboratories and companies.

In many areas, the distinction between the results of basic research, and their contribution to the advancement of our knowledge base, and the development of new solutions to practical problems which can be transferred into new products and processes, is no longer valid. Especially in biotechnology, computer sciences and materials research, innovation has turned into a simultaneous, interactive process. This has been by no means an easy development; rather it turns out to involve a difficult process of mutual learning and trust-building. Nevertheless it seems a necessary, if not inevitable step for both sides.

4. The Role of private Foundations

Financial constraints in the public sector have led researchers and policy-makers to stress the need for new regulatory frameworks, such as tax incentives, and the provision of fewer bureaucratic procedures, so as to stimulate private initiative, particularly in the field of higher education and research. Given the enormous wealth accumulated in Europe since the Second World War, this seems a timely idea, not least because of the large impending transfers of private property from one generation to another. In Germany, for example, it has been estimated that within the next ten to fifteen years, more than three trillion euros are at stake. This is indeed a unique opportunity for foundations to be established, but also for existing charities to accumulate capital.

But is this opportunity also a universal remedy for science and technological development, for the destitute German higher education and research system? Most probably it is not: if one looks at the 10,000 foundations in Germany, one realises that only about 13 % provide funds for higher education and research; and that the funds provided by these foundations amount to only 450 to 500 million euros annually. Therefore, private foundations cannot compensate for huge deficits in public spending. Indeed, even the Volkswagen Foundation, which is by far the largest

German foundation – it awards some 100 million euros per year –, has explicitly excluded a compensatory function from its portfolio.

5. Leading institutional change

Given the billions of Euros spent by public authorities and enterprises, one might ask what impact comparatively small-scale foundations can achieve in this area. As I will try to demonstrate, it is indeed not the overall amount of money spent, but rather the approach taken by foundations that makes the difference. Their autonomy, alertness, and flexibility enable them to operate effectively as facilitators of change, to establish islands of success, and thereby also to achieve considerable impact on policy- and decision-makers. By fostering risky projects, encouraging networking across disciplinary, institutional, and national borders, and by helping some of the most creative researchers to break new grounds, foundations are able to prove that even on a European scale small things matter.

For foundations leading institutional change is, therefore, similar to encouraging and supporting institutions and its leaders to engage in change processes towards achieving research- and innovation-friendly structures. In some of his recent publications, Rogers Hollingsworth has found medium scale research organisations to be the most probable environment for achieving major breakthroughs in research and innovation. His studies on research institutions in the field of biomedicine revealed two basic concepts that seem to be institutional conditions sine qua non for ground breaking research: firstly an interdisciplinary organisational structure and secondly strong leadership connected with very high quality standards (cf. Rogers Hollingsworth et. al. [Fostering Scientific Excellence]).

Research institutions and organisations, however, have reacted to the increasing complexity of knowledge creation and research with an increase in size and diversity. Subsequently, this creates an increase in bureaucracy and hierarchic structures. In other words: the increase in diversity and size creates a decrease in integration and flexibility – and this lack of flexibility and integration inhibits trans-disciplinary research and innovation. The reasons for this are manifold. One thing, however, is clear: if universities want to profit from private funding, they have to be flexible, they have to accept foundations as partners, and have to engage with them in a productive interplay.

For these reasons, foundations are vitally interested in research-friendly, flexible structures at universities and do help them concerning their decision-making and administration: e. g., by helping them to create the structures and processes which make their governance and administration more efficient. All of this serves the need to create a research-friendly environment in which minds and ideas can develop. Thanks to private foundations, which respect an individual university's right to summon its strengths and pull itself out of difficulties, more than twenty of the eighty-five universities are now being supported in reconfiguring their capacity to manage their affairs more effectively.

In the funding initiative "Leistungsfähigkeit durch Eigenverantwortung" (Efficiency through Autonomy) 10 German universities received as much as € 12 million from the Volkswagen Foundation. The aim of this programme was to improve the conditions for teaching and research at the respective universities. However, we also wanted to show that administrative and organisational change is possible. Hence, this funding initiative was not designed to start a major redesign of science and research policy in Germany. Rather, the ten universities supported were to become role-models for similar institutions, and of course, also the legislation could learn from their experimental approaches.

One of the responses this initiative provoked is the reform project "the deregulated university", which has been set up recently by the Stifterverband der deutschen Wissenschaft. To foster the institutional change in the direction of more autonomy the foundation picked five role-models (TU Darmstadt, TU München, TU Dresden, Universität Heidelberg, Universität Göttingen) to show that their efforts to unleash the universities potentials could be an adoptable way for other universities as well.

The requirements of the 'Habilitation' for a long time have implied that young researchers are dependent upon established professors, whom they serve as 'assistants', before they complete the 'Habilitation' at an average age of forty years. This is clearly too late. It makes our universities less attractive than, for example, those of the United States, which offer talented scholars early opportunities to pursue their research as independent 'assistant professors'.

Even though this deplorable situation is recognized in almost all parts of our research system, the system itself, is not able (or not willing?) to change. And neither are most

of its institutions, be it on the funding, or on the researching end. When, for example, in the mid-1980s, the German Science Council recommended a restructuring of doctoral training, neither the Federal States nor the Deutsche Forschungsgemeinschaft, but the Thyssen Foundation, the Bosch Foundation, and the Volkswagen Foundation were the first to offer support to universities willing to implement new thematically focused graduate schools (Graduiertenkollegs). This lack of readiness and ability to change is also apparent as to new opportunities for young researchers. In order to demonstrate that new career patterns can be integrated into the German system, the Volkswagen Foundation created in 1996 a programme for junior research group leaders. More than fifty have been and still are supported. With its newest funding initiative supporting young researchers, the Foundation aims at combining support for both persons as well as institutions. With the “Lichtenberg Professorships” the Volkswagen Foundation will provide support to outstandingly qualified (junior) academics in connection with innovative fields of research located between the disciplines as well as new teaching concepts within the respective research environment. The funding which will be made available for a period of up to eight years is expected to pave an interesting new path in higher education. On the one hand, young scholars will be offered a future perspective on a kind of “tenure-track”, and on the other hand institutions will gain a better basis for planning – both from a strategic viewpoint with respect to content and institutional structures as well as concerning personnel development in the sense of long-term capacity building

6. New approaches to international-grant making

Where public institutions are reluctant to encourage new ideas, private foundations also have a special role to play. They have been actively involved in international co-operation through exchange programmes, and by making academics aware of problems in other countries. Often, they are the first to support scholars and researchers from politically sensitive regions. It will in future be even more important for private foundations to support strategically relevant initiatives, including high-risk activities, e.g. focussing on Sub-Saharan Africa, for which it is difficult, if not impossible to gain public support.

The Volkswagen Foundation's funding initiative "Knowledge for Tomorrow. Cooperative Research Projects in Sub-Saharan Africa" aims at medium-, to long-term cooperation between German and African research workers and is open to all disciplines. By means of providing targeted support to junior scholars and scientists it is intended to create the conditions necessary for a self-sustaining process of development in research and higher education in Africa. The initiative aims at providing a contribution to the development and sustainable reinforcement of research in sub-Saharan Africa. This is to be achieved via research projects developed and carried out by African scholars and scientists in cooperation with German partners, providing junior scientists in Africa with an opportunity to enhance their skills and academic qualification. Besides this Afro-German cooperation, a special focus will be on the development, reinforcement and extension of academic networks inside Africa.

In order to support the mutual identification of future-oriented areas of investigation and the cooperative development of innovative research issues the Volkswagen Foundation sets up and carries out thematic workshops in close cooperation with researchers from Europe as well as from Africa. These meetings will be utilized to discuss the current status of research, identify subjects of investigation, and to explore the possibilities for cooperation that should also embrace other researchers and research locations inside sub-Saharan Africa.

Nevertheless, we have to admit that the power and the resources of foundations are limited. The intellectual lighthouses, or perhaps also the islands of hope and success we can help to create will only achieve wider impacts if we can link up with partners, convince decision-makers that changes are feasible, and engage in advocacy and strategic alliances. The latter applies even more when we take a wider perspective and acknowledge that there can be no such thing as national, or European research in the regional sense of the term. Research is international by definition. For one thing, scholarly concerns do not end at national borders. In fact, rather the opposite is the case: many research areas deal with topics that have emerged in a global context.

If we take a closer look at the role of European higher education and research in the world of learning, we quickly realize that we have not only lost a lot of ground over

the past decades, but that we have also not been taking our responsibilities seriously. In the case of the developing world, in particular Sub-Saharan Africa, we have strong reasons to be ashamed of our inability to find appropriate solutions. As Kofi Annan pointed out in an article entitled “A Challenge to the World’s Scientists”:
“The number of scientists in proportion to population in the developing countries is 10 to 30 times smaller than in the developed countries. Ninety-five percent of the new science in the world is created in the countries comprising only one fifth of the world’s population. And much of that science – in the realm of health, for example – neglects the problems that afflict most of the world’s people. “(Science, vol. 299, 7 March 2003, p. 1485.)

If roughly 90 % of the medical research conducted worldwide focus on about 10 % of the diseases, i.e. primarily on those most common in the Northern hemisphere, there are fundamental shortcomings to be acknowledged and new approaches to be taken. Of course, foundations alone cannot and indeed should not pretend to be able to solve these problems. The grand challenges involved must be addressed at the G8-, and UN level. But again foundations can help to encourage those who are willing to bring about change. The traditional, postcolonial approaches to collaborative research are no longer viable. What is needed, is to develop new ways of sustainable capacity-building, to take a long term view in order to ultimately empower African researchers with the confidence and the courage to chart their own future. So far, in a lot of cases one crucial long term success is missing: the true “commitment to listen to local voices” (The Lancet, vol. 363, 3 April 2004, p. 1087) a deep understanding of the issues and the corresponding research needs. Without serious attempts to overcome our Eurocentric views of the world, to adapt to local problems and perspectives, and to develop already early on the funding concepts in truly symmetric partnership, we will not succeed in responding adequately to the grand challenges of our common future.

Several European foundations have already begun to change their strategies and funding modes accordingly in order to improve on North-South as well as South-South cooperation. In addition, initiatives such as “Europe in the World”, the attempts made to mobilise leadership and resources towards achieving the Millenium Development Goals, the HIV/AIDS funders’ initiative, and the EFC Sub-Saharan

Africa Funders Network have become widely acknowledged as important steps towards taking on jointly the responsibility to successfully engage in locally informed and sustainable research capacity building. In the end, both sides will benefit from these endeavours. The idea of two different worlds of science should be an “anathema to the scientific spirit” (Kofi Annan), but it will require the commitment of us all to change current conditions, and to bring the full benefits of training and research to every part of the world.

7. Conclusions and future tasks

Within what I would call the “Magic Triangle” of successful research and innovation – consisting of risk-taking, flexibility and quality assurance – foundations can encourage, support, and inspire institutions and individuals to build and shape their research environment. Above all, however, “trust” is in the centre of this triangle. The few examples I gave of the work of the Volkswagen Foundation were meant to show that foundations can contribute to this magic triangle by encouraging risk-taking, by stimulating new developments, redressing imbalances, creating role models for an effective change of research strategies or institutional structures, and by contributing to the creation of a more research-friendly society. Due to the perpetuity of their funds, foundations are reliable partners, willing to foster risky projects, and to help researchers to break new grounds. They can help their partners in universities and other research institutions to act, not only to react, in the respective innovation processes, in the development of scholarship, and in selected areas of basic and strategic research.

Being in the Einstein-year we must ask ourselves: To what extent would we have been able to recognize a multi-faceted genius like Albert Einstein, appreciate his unconventional way of thinking, and ultimately provide him with the necessary resources when he was still working at the Swiss Patent Office. Responding positively to these challenges is not an easy task but it is worth every effort in order to make sure that some of our best, often quite vulnerable minds can have trust in the ability of our institutions to engage in truly intellectual risk taking."