A European research identity

A talk with Philippe Busquin, Commissioner for Research of the European Commission

EMBO Reports (ER): What type of identity can European science establish for itself in comparison with American science or international science in general?

Philippe Busquin (PB): This is one of the questions behind our communication on a 'European Research Area,' to specify the nature of the evolution of science in Europe, and here I would make three statements.

First: in general, Europe doesn't spend enough money for research and development; it spends 1.2% of its Gross Domestic Product compared to 2.7% in the United States and 3.1% in Japan. I delivered this statement to the Heads of State at the beginning of this year, and they appreciated its significance.

Secondly: research in Europe is very fragmented. We have national programmes, as well as a European programme and intergovernmental organizations. But there is not much organized contact between them. My goal is to create links, to create a web. There is work for everyone, which must be optimized by avoiding a duplication of efforts while at the same time merging diverse programmes dealing with similar subjects to give them a sufficient critical mass.

Europeans have to reconcile themselves with science and research

Finally, there is a cultural point: Europeans have to reconcile themselves with science and research, because in Europe there is a certain lack of belief in progress. People are a bit frightened, and we do have to make scientific careers attractive for young people. As the new Commissioner, I voiced this triple programme; I had no precedents. We must find a solution for these issues in Europe. Particularly if you

look at the new entries in the scientific society growing at a rate of 25.5%, and new products of science—if Europe wants to remain prosperous, keep its social system and create employment, it has to invest more efforts into science. And it is very important that everybody is aware of that.

ER: Given that the National Research Councils will definitely put up resistance against this programme so as not to lose their independence—what time frame do you see to overcome these bureaucratic and national resistances?

PB: Obviously, the world was not built in one day. First of all we have to deal with all the different national programmes, with the globalization of economies and information, with the Internet etc... In this context, national borders are a bit tight. And I think everybody knows that. The scientific community is becoming more and more

European, if not international, as is industry. It cannot be forgotten that European research and the research commissioners are aiming at a common goal. In the treaty that created Europe it is absolutely clear: research has to contribute to growth, development and employment in Europe.

We have human potential in Europe, we have areas of expertise, and we should nurture those that are most promising

There is even more: from the historical point of view, research has been more a tool for economic development than a means for the acquisition of knowledge.

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Of course, nowadays the two are very close. That means we have to make one thing understandable to the Heads of State: if they want prosperous countries, they should take into account that today's research is an investment in economic growth and employment the day after tomorrow. That's a paraphrase of Helmut Schmidt's formula when he said, 'today's investments are tomorrow's employment.' We do have human potential in Europe, we have areas of expertise, and we should nurture those that are most promising. That does not mean we would not welcome exchange at the same time; there should be openness. But this area has to become more attractive. And therefore we should make sure that there is space here to attract the very best.

ER: The system of support and funding for science is mostly national at present, whereas science itself is very international. Science is part economic and part cultural; how can the internationalization of science transcend aspects of national culture which might inhibit its development? For example, it is sometimes difficult to 'translate' academic degrees in different countries, which might inhibit scientists' mobility.

PB: I think you have to consider Europe as a whole, with its advantages and disadvantages. For example, different educational systems provide us with creativity. Maybe I can't say this to biologists or philosophers, but homogeneity is our death. Heterogeneity is what we should strive for; it is very important. The United States is building its development on the basis of input from very different cultures. The problem is that in Europe we do have different educational systems, and we have to respect that, so we are lacking some tools. People in different countries have to confront this problem, and many of them eventually go to the States. And there they do not have these problems. Here I think we should not try to adopt the American model, because it's impossible.

A central component of Europe is diversity. The American model developed in a specific cultural, economic and social context, and thus it cannot simply be adopted in Europe. I think people make the mistake of believing this can be done. We need to take the good aspects of the American system and adapt them to our diversity. But if diversity is the dominant element, if we are not able to create coherence and to work together, then we

are faced with a real handicap. If educational systems do not converge, we are also obviously handicapped. But currently there are already projects aimed at achieving that goal, starting, for example, with making students more mobile. There is a European programme called 'Socrates' that is establishing Europe already on the level of studies, and thus contacts between different cultures, and students of all disciplines are participating.

ER: With regard to the US: the NIH and NSF grant system has been proven to be highly successful. Should we not simply adopt the successful parts of this system?

PB: Of course. We clearly have to consider that aspect of what is happening in the United States. This is not a question of the value of research, but rather of how to organize it better. There must be a desire on the part of politicians to work on this level. In Europe there are still divisions between research at the universities and industry, and there is not enough synergy. We need such synergy; we need to change mentalities. This division cannot remain. Basic research is leading more and more to innovations. And we need to create the necessary tools. Yesterday I learned about EMBL's involvement in Technology Transfer—this is the kind of activity that is important. In the United States, this has been done for certainly 20 years. That's the problem: the idea that the scientists should also be engaged in economic development. We should copy that kind of mentality from the United States, but not necessarily the whole system.

ER: If a researcher in the United States wants to achieve a certain goal, he or she finds well-developed political instruments to proceed with the plan. What can researchers in Europe do to make sure that their views are properly represented on a European scale?

Scientists should actively participate in society to make other citizens understand the importance of research

PB: I think first of all they have to have more presence in society. Scientists are citizens, and they should actively participate in society to make other citizens understand the importance of research.

Today that's really very important. In everyday life, as well in the fields of health, the environment, food production, and quality of life, we have a growing need for science. Therefore, science and society have to be reconciled. Science must acquire a much better image in Europe. If that happens, it will be much easier to gain support and funding from politicians, who are highly dependent on the public opinion. If the public opinion in Europe is against genetically modified organisms, the end effect will be a brake on genetic research in plants.

ER: Does that mean that researchers should become more involved in lobbying? Do you think that in addition to communicating and informing, it's a good idea for scientists to become lobbyists?

PB: We are living in a governmental mode where social groups have to manifest themselves. Social groups that do not manifest themselves are forgotten by history. We are living in a different mode of society. The best-known social groups are those you can see on the TV, and that's usually the soccer teams... of course, I mean that ironically.

ER: In science, events sometimes happen too suddenly to build a base of public support that can then exert an influence on political policy. What can be done in the face of this reality?

You cannot set up a research programme over four years without adding a certain amount of liberty

PB: The ways Framework Programmes are currently defined, our ability to respond to new developments is quite restricted. We have little space and liberty, and therefore there is a need for certain flexibility. You cannot realistically set up a programme lasting over four years without adding a certain amount of liberty. The ideas and the progress of science are proceeding so rapidly that public research programmes require a certain amount of flexibility. We have faced this problem of lacking flexibility when the mad cow disease emerged. We managed to respond relatively quickly at this time, but eventually we will have to be able to re-orientate ourselves much more quickly.

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ER: Right now there is a considerable brain drain of scientists from Europe towards the United States, perhaps because there they may find better funding. How could Europe become more attractive for scientists?

Researchers have to be recognized as a rich resource for the future

PB: There is not a single answer to that question. First of all, a climate has to be created in Europe that is much more favourable for research. Researchers have to be recognized as a rich resource for the future. The present mentality is one in which politicians pose the question 'Why should they be given money?' This mentality in Europe creates a vicious circle. It makes transforming research into a product much more difficult than in the United States. The link between research results and the development of an application is weaker, slower, and regarded as less important. So for many people, basic research is considered a luxury. This is not my opinion, but we have to look at the reasons behind it. Some people argue that we have enough research and researchers in Europe, but that the applications of their work are not well managed, that there is not sufficient innovation. It is true that we should improve our innovation process in Europe, but the more high-quality innovations we produce, the more researchers we will need.

First of all we need to re-establish the status of the researcher. He or she cannot be looked upon as somebody tucked into a corner and doing a little bit of laboratory work, so we have to re-establish the visibility of the researcher. To regain that in Europe, we have to demonstrate excellence. That's why I want to build centres of excellence here. I have met many scientists. They all know Stanford, Berkeley etc.—Heidelberg is less known, even if sometimes the work that is done here may be more important than what is being done in Berkeley. The EMBL has Member States, for example, but to achieve a position in the scientific structure in the United States, you need to have a name—that's a precondition. European centres of excellence need to have well-established names. Additionally, we definitely need

the capacity to offer better conditions to scientists from America, India, China. This will make Europe more interesting. Once there is a strong, top-level research project with clear goals, the researchers will come. What we have to do is to create these conditions.

ER: I would like to quote one of your responses to a commentary on the European Research Area paper. 'Other, greater investment is needed for research in Europe. Public support measures are not a substitute for private investment.' Does this statement hold for both applied and basic research, when it's much easier to get funding from industry for applied research? Secondly, there have been repeated instances where an interesting international project 'falls into a hole.' Europe says 'we cannot finance it without local support,' and the locals say 'we don't want to support it without European support.'

PB: Regarding the first question, basic research compared to applied research, we are witnessing a rapid evolution. In many systems, even from a legal point of view, basic research is considered as part of the domain of education, whereas applied research is meant to be part of the industry. Therefore you sometimes have a very strict separation of funding for basic and applied research. This concept is out-of-date. It dates back to an industrial society where an invention took 20 years to reach an applicable form. That is changing. Every industrial person I meet tells me that what is definitely needed now is quality basic research.

As to your second question: the link between Europe and local systems is quite critical because the same effort is not being made in research and development all over Europe. Some countries invest much more than others. In Sweden, for example, these days they spend 3.9% of the GDP for research and development. And that's not only the state, and it's not only public money, but it is also business money. You have to understand that on the European level, the states that spend a lot of money ask 'Why should we give European money to a region that is making little effort?' Europe consists of 15 countries, each of which has contributed, each of which is financing. The money the European Commission distributes comes from every member state. Therefore the efforts the member states make should be more consistent. We cannot resolve such issues between states that spend 1 or 2% of their GDP, public money for research and others that spend only 0.2 or 0.3%. Here it's highly necessary to do some benchmarking.

To re-establish the visibility of the researcher, we have to demonstrate excellence

ER: The problem also affects institutions with clearly international aims but which find themselves in a local national place—for example, SWISS-PROT. This is

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a truly international project, which sits by historical accident in two European countries. All databases—which are in a sense in one place, and in another sense everywhere—are confronting the same problem. Another example is the European Mutant Mouse Archive.

PB: Here it is clear that such structures should be developed for Europe as a whole. That's it, the spirit of Europe. But it is true that this is an evolution. We want the structures to serve and to be accepted by all Europeans. Therefore, we have to provide a level of quality, which everybody can accept. By this means we create a dynamic. And then we need structures like you, like EMBO and EMBL, that lift such quality to a European dimension. The Commission wishes to work together with structures like these. And not only with a single place in one member state.

ER: You mentioned the division of applied research financed by industry, and basic

research, and that this system doesn't work anymore. But industry is withdrawing from basic research. An example is that Roche closed the Institute of Immunology in Basel. So what is the plan to develop synergy between governments and industry; how to convince industry back to finance basic research?

PB: The principle of basic research is that it has to be disseminated well. It has to be accessible and include well-known names. Because of this, a single company cannot be responsible for financing basic research. These efforts have to be spread. The principal role of business is to make money. I believe that the challenges of the life sciences imply an initial, collective effort. Everybody has to contribute. At a later stage of R&D, competition will become more important in, for example, the production of a specific medication. I think competition and market together work to create the necessary dynamic.

We have seen in certain types of regimes that without these two components, there is no progress.

The balance between these two factors and how much basic research will be supported will be different for different sectors. In the life sciences, I believe that basic research will always be done. In other sectors, for example, in materials, of course, basic research still exists, but the balance can be much different. Progress in science is not the same in all areas, so research programmes will need a flexible geometry.

ER: Commissioner Busquin, thank you for the interview.

The interview was conducted by Holger Breithaupt, Russ Hodge and Frank Gannon. The translation from the French was made by Anka Stark. Photos by Kurt Vanderberghe and Russ Hodge.

DOI: 10.1093/embo-reports/kvd040