



OPINION n°2014-29

« THE POLICY OF EXCELLENCE IN RESEARCH »

Approved at the plenary session of 27 may 2014



I. Joint formal internal request

This COMETS Opinion is the result of a joint formal internal request by the CNRS President & CEO (*version of 27 May 2014*).

The legitimate ambition of publicly funded research is to achieve a very high standard. It is an ambition that frequently refers to 'excellence', a concept that does not originate from the scientific community itself, but from the world of innovation, which has been using and misusing it since the 1980s. It has pervaded research vocabulary since the 2000s and all developed countries now use it as a criterion to define their policies in higher education and research.

The reference to excellence has multiple, ill-defined functions. Today, it tends to be diverted from its real meaning—an ideal to which every researcher aspires—to a more managerial vision, which has its origins in the scientific policy of European universities. France has also entered this race for excellence, with significant consequences on the way research is conducted.

In this Opinion, COMETS analyses the effects that such policies have on research from an ethical standpoint.

We first discuss the origins of the strategy of excellence, highlighted by the European Community in the wake of its Lisbon Strategy of 2000 affirming the strategic nature of development based on the expansion and use of knowledge. The quest for excellence gained momentum in a context of tight teaching and research budgets. Most of the time, it refers to a method of governance that, for those in charge, becomes a hallmark of good management. For those involved in research, it becomes a prerequisite for access to more resources and better career prospects.

We then discuss why relying heavily on criteria of excellence entails biases and risks. Indeed, it has a strong influence on research practices and always introduces biases that are not necessarily helpful among the different players involved. The objectives of the policy guidelines combine the quest for excellence with efficient public spending, implying the continued pursuit of thematic priorities. This has negative consequences on the diversity of scientific output. Moreover, the criteria for assessing excellence may in themselves be open to question and the methods used to evaluate it may be open to ethical abuses.

We next consider the question of how to foster and consolidate the high standard of research that remains the goal of all higher education institutions. More specifically, there is a pyramid of research skills of which researchers and laboratories 'of excellence' are only the tip: we reflect upon the relationships that should be developed between the base and the top of this pyramid, with a view to achieving equity and efficiency.

Finally, we propose a discussion of good practices in order to achieve high standards in research, emphasising collaborative ethics and shared values. This raises the question of the responsibility of researchers—particularly the best known due to their rewards—in raising the capabilities of society as a whole, which is supposed to progress through intelligence and knowledge.



II. Analysis

A. Excellence: the managerial vision of the Lisbon Strategy

The last decade has seen a race for excellence in Europe's universities. The Lisbon Strategy, which was established at the Lisbon European Council in March 2000, introduced a policy direction "to make the EU the most competitive and dynamic knowledge-based economy in the world by 2010...". Shortly afterwards, in 2003, the international Shanghai ranking (whose criteria are admittedly open to criticism) pointed out that among the top 100 universities only five were German, three were French and none were Spanish (a record that is hardly better even when extended to the top 200, especially for France). The conditions were ripe for competition to become a major issue in the world of higher education and research (see, for example, the analysis by Patricia Pol¹).

European states are now pursuing a proactive policy of modernisation, with the concurrent ambition of developing highly competitive economies based on the need to redistribute budgets for greater efficiency. The mixed results ²at mid-term in 2005 led the European Commission to target actions on the quest for excellence "to ensure quality research on a par with American universities". The resulting 'benchmarking' of research involves ideas of coordination, ranking and standards that did not exist before, the aim being to focus resources. European institutions are bowing to these new models, which are contrary to their tradition of egalitarianism, and are setting up initiatives of excellence to ensure competitiveness and international exposure. In Germany, for example, a federal "*Exzellenzinitiative*" plan ³was launched in 2006, then renewed and strengthened in 2011 to fund "clusters" of excellence and universities of excellence (an initial assessment has already been made). Spain launched "The International Campus of Excellence" in 2008, an initiative which has since been discontinued due to lack of funds. It should be noted that in Great Britain, drastic choices have been made since the Thatcher government to strengthen the resources of a limited number of universities. In France, the PIA future investment programme issued its first calls for tender in 2010 (see § 2) and has resulted in a particularly complex system.

The **record of the Lisbon Strategy** for the decade 2000-2010 is somewhat disappointing. The European Union is a long way from having achieved its objectives in terms of the size of research budgets in relation to GDP: with an almost unchanged average of 1.9% in 2008 (versus 1.85% in 2000), it is still far from the 3% target set in 2000. If we look at **public R&D budgets** alone, we find the same stagnation at around 1%. The new EU2020 strategy retains the broad lines of the Lisbon objective. No major national or European debate has yet been able to identify the conditions and implications of the strategic behaviour that accompanies use of the criterion of excellence. Indeed, strategies of excellence most often refer to a method of governance: on the part of those in charge, it is the hallmark of good management and meant to encourage cooperative projects, forge closer ties with the private sector and increase international exposure; on the part of those involved in research, it is a prerequisite for access to more resources and better career prospects.

The effectiveness of this competitive rationale in the context of research findings may be questioned. This Opinion focuses on the human consequences of such strategies from an ethical standpoint.

¹ Patricia Pol: "*La passion de l'excellence dans l'enseignement supérieur en Allemagne, en Espagne et en France*" [*The quest for excellence in higher education in Germany, Spain and France*]. *Repères*, No. 14. May 2012.

² See <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:c11325&from=IT>

³ See (in French) <https://www.science-allemande.fr/la-recherche-en-allemande/les-acteurs-de-la-recherche/universites-et-initiative-dexcellence/>

B. Excellence in the French research policy

The PIA programme has saturated a complex and targeted funding system where excellence is the key word. Within the government budget, the French Ministry of Higher Education and Research's⁴ annual performance plan for 2014 places excellence at the heart of its objectives: *"The primary objective for French research must remain that of scientific excellence, in an increasingly competitive international context. The tools for measuring excellence are well known: Excellence is mainly measured by the number and especially the quality of scientific publications, as well as by international awards and the success rate in European and international calls for tender"*. In the interest of efficient public spending, the same project adds that the scope of research is bound to lead to specialisation, identifying ten *"very high scientific and technological priorities that will enable us to rise to the major socio-economic and/or environmental challenges that research will have to face in the coming decades and thus respond to vital issues for society, the economy, industry or energy independence."*

1. The effects on creativity of expressing scientific priorities

The choice of priority themes is thus justified by the societal challenges that research must help resolve, but the fierce competition between teams on projects in priority areas has negative consequences (COMETS Opinion, 2010). It introduces biases that are not necessarily helpful between those involved in research, which can lead to opportunistic reorganisation of teams or units and, in general, to individualistic behaviour.

The reduction, or even withdrawal, of recurrent funding in favour of targeted funding is also particularly damaging for teams working in rare or highly specialised fields, or on very new topics that are not covered in calls for tender or international comparisons. And how can we provide an entry point for unexpected, serendipitous discoveries that require a certain freedom of investigation and that may occur in emerging structures, not normally included in the categories of excellence? Creativity needs room for freedom to take risks, whether for public authorities or for individuals, which means not just confining oneself to trending topics but also supporting researchers who are breaking new ground and swimming against the tide of mainstream subjects. However, the opportunities to support risk-taking have greatly diminished: changes in activity are generally heavily penalised by current funding patterns and by the demand for a quick return on investment.

2. On what criteria should 'excellence' be judged?

Justifying and evaluating excellence implies multiplying the number of expert committees set up at all levels. This entails a considerable cost, if only in terms of the time they take away from research per se. In fact, the recognition of 'excellence' in research is itself based on an ambiguity. Even if we hold to the definition given above, it is generally determined on the basis of an a priori assessment, often based on work already in progress. Taken to the extreme, this amounts to recognising as excellent only what has already been achieved and not what is in the making. Indeed, it is rarely thoroughly reviewed afterwards, for example at the end of a research contract; this limits the learning processes and the potential for improvement that can be expected from such assessments.

⁴ *Multidisciplinary scientific and technological research, project 172*



Moreover, assessing the excellence of individuals, teams, institutions, research projects, etc., by a ranking system recognised by research institutions usually circumvents an in-depth consideration of selection criteria. Paradoxically, assessment times and discussions of criteria among reviewers have been reduced, almost in proportion to the increase in the number of assessments conducted. It is as if the postulated excellence of the reviewers is considered sufficient. However, there are obvious risks: specialisation of reviewers, decontextualisation of assessments, one-dimensionality, over-representation of certain disciplines and lack of transparency in the choice of criteria. The European Research Council (ERC) offers a very instructive example as its methods are considered the 'gold standard' of assessment: it brings together a variety of skills in a single high-level panel. The objective of identifying supposedly 'excellent' researchers is largely achieved. However, slight selection biases have been noted: candidates in the best context are given an advantage; subjects at disciplinary interfaces are less likely to be acknowledged; trending topics are given preference⁵. No assessment can ever be perfect !

3. Limitations of the strategy of excellence

It should be noted that there is a pyramid of skills in the research community, of which the researchers and 'laboratories of excellence' are only the tip. This means that if we only fund the proclaimed excellence, the base will no longer have the means to function and, taken to the extreme, excellence will kill the rest! This situation would thus be fatal to excellence itself. The role of research partway up the pyramid should not be underestimated. Exploratory research at the boundaries, often full of uncertainty, is highly instructive; new methods need to be pioneered before they are established; and history sometimes comes back to what were considered mistakes at the time... Far from being an obstacle to the emergence of innovative and effective research, a broad base is actually necessary for the top of the pyramid, which relies on the work of all the research players below to rise to greater heights. High-level research is born of the combination of talent and opportunity: this is what must be cultivated everywhere by breaking down a rigid, demotivating model that prevents many researchers from embarking on projects that are deemed too ambitious for them.

We need to look at the bottom-up and top-down interactions within this pyramid, because excellence is multi-faceted. In addition to visible excellence at the top of the pyramid, there is a 'niche excellence' hidden in the middle of the pyramid, and therefore less regarded. The development of very dynamic research fields has often been preceded by sometimes very long periods when only a few researchers have been active outside the funding circuits and international competition. The "niche excellence" of today, which must be identified and protected, may become the excellence of tomorrow. It is also necessary to leave room for "specialised" or less visible subjects, whose disappearance would be a very damaging loss for both our intellectual heritage and know-how. Finally, it should be noted that a very high level of undisclosed research may exist in teams working closely with the industrial sector, protected by the imperatives of secrecy in economic competition. This form of excellence is essential to French companies, despite it not being very visible in terms of public sector assessment criteria.

It should be remembered that the current context implies an urgent need to share the fruits of scientific activity with the whole country and to take into account the varied needs of businesses. Innovation often emerges from laboratories located outside the most prominent establishments: very high-level production does not only develop from the noble paths that characterise the French elites, trained in preparatory classes and the prestigious Grandes Ecoles engineering schools. Technological courses, university institutes of technology and medium-sized engineering schools are all pathways for scientists of all levels to find jobs that meet society's needs. It has been observed that the development of high-level research needs a favourable soil in a given geographical area (university laboratories, engineering schools, business

⁵ Review of the exercise by ERC heads at the review day with all panel chairs (November 2013)

pools and cultural establishments): the diversity of skills is what makes the wealth of first-rate ensembles, of which MIT in the United States provides a good example.

4. How can we stimulate and consolidate high-level research?

The legitimate ambition of publicly funded research is to achieve a high standard. To achieve this, however, it is necessary to take into account the fact that the production of leading research has a momentum that, by its very nature, cannot be programmed. It is not fully embedded in the research landscape as it stands, which is rigidly determined by assessments at a given time and place.

First, it is important to create the conditions that will attract the best researchers to our laboratories. Minds with a passion for research can be found just about anywhere; the brightest and most creative are not found only in the most prestigious universities; so-called laboratories of excellence can sometimes turn into fortresses. The initial situation can change, which is why it is important to ensure the diversity of talent pools, to maintain skill pools and enable them to communicate with each other. Mobility for all researchers is an essential condition for intellectual enrichment, as are responsiveness and adaptation to new situations. It is necessary to facilitate trajectories that can shift and change course, to avoid early specialisation, and in general to create the conditions that allow careers to be rethought throughout a person's working life.

On the other hand, when a research project is well under way, the conditions for its development and, above all, its sustainability must be ensured. Short- or medium-term projects should be allowed to continue when they have produced interesting results. More generally, the skills of good teams need to be maintained. However, the rationale behind calls for tender too often leads to the search for topics that are more concerned with novelty than with creating the conditions for effective use of skills. Long-term development need not conflict with responsiveness or adaptation to new situations.

C. Ethical behaviour is essential for 'excellence'

1. Too much competition leads to misconduct and loss of efficiency

In a 2014 Opinion, COMETS pointed out that unethical practices are liable to occur in some laboratories. It attributes most of them to the fierce competition for excellence. The most serious misconduct, which is infrequent but on the increase, is outright fraud such as falsification of data or plagiarism. Let us recall the words of the famous Korean fraudster Hwang Woo-suk, who boasted of successfully creating human embryonic stem cells⁶ by cloning for the first time: "You can't succeed at something unless you are obsessed with success. We were so obsessed that we deluded ourselves". More common in our circles are detrimental publication practices: forgetting contributors in the list of authors, incomplete references, sloppy articles, withholding information, etc. The current climate of competitiveness generated by the race for excellence calls for an awareness of the importance of ethics in the training of researchers. This training, which has long been developed in Anglo-Saxon countries, is still insufficiently developed in France. COMETS has published a guide entitled "Integrity and responsibility in research practices" and believes that its use is particularly appropriate in the current context.

⁶ See https://en.wikipedia.org/wiki/Hwang_Woo-suk



When you visit the top laboratories on the other side of the Atlantic, you are struck by the fact that scientific excellence is based largely on the responsiveness of the research group to new ideas, and that the ability to quickly rally a group of researchers to a new project is paramount. In France, young researchers who join the CNRS, often after several years of post-doctoral work abroad, have indeed acquired this ability to turn to new projects, and for some, 'excellence' goes hand in hand with obtaining substantial funding (ATIP-Avenir, French national research agency ANR, the ERC, etc.). In response to such recognition, it is very tempting to forget that research is not the achievement of a single individual but of a community, and that sharing is a prerequisite to successful research and responsiveness to new projects. Should we blame young researchers who are tempted to adopt an individualistic attitude, when we know that the assessment of their activity and the advancement of their career are conditional on the need to present a project distinct from that of the head of the team to which they are assigned?

It should also be noted that current mechanisms for acknowledging quality are based on the promotion of individuals (awards, medals, bonuses, contracts, etc.). It would be fairer (and more efficient) to allocate some of the related funding to the teams that contributed to this success. Mention should be made of the 'excellence bonus', now renamed the 'doctoral and research supervision bonus', the awarding of which is often a source of tension within teams.

2. For collaborative ethics

Do we still know what it is to be together⁷ in the competitive world of research, where competition is always more important than agreement? As Sennett says, "Learning to cooperate is not easy; cooperation is an acquired experience rather than simply sharing without any forethought". And are we aware that there is currently a strong global trend among scientific communities towards open data, data sharing and open science commons⁸? The policy of calls for projects tends to exalt individualistic behaviour. Taken to the extreme, the multiplication of ERC contracts in a university department (contracts attributed to an individual rather than a team) can lead to biases, which are ultimately detrimental to the life of the community unless there is a reasonable redistribution of the considerable resources awarded. Whether large or small, contracts must be able to enhance the life of a laboratory as a whole, a collective structure that is still essential for general development. Today, let us recall the obvious: cutting-edge research is developed within the framework of teams, which vary in size depending on the field, but whose wealth lies in the variety of talents, experience and ages represented.

Furthermore, inter-team or inter-laboratory cooperation contributes to overall competitiveness. Intelligence is more effective if it is shared rather than confined. There is a major advantage in stimulating the development of thematic or multidisciplinary networks, by allocating them significant resources in order to foster the circulation of ideas, the exchange of doctoral and post-doctoral students and international relations. Some regions have a proactive policy of funding networks, which it is important to keep alive beyond time-limited contractual funding. CNRS research groups provide excellent tools for bringing people together, but unfortunately they have too few resources. It is also worth noting that it could be beneficial to prolong temporary team partnerships set up for calls for projects once the contract has ended, regardless of whether it has received funding or not.

Recent studies, such as those of the PresTence project run by the ANR and involving several institutions in various countries, clearly indicate that good ethical practices foster very high standards and that in any case there can be no excellence without ethics. A major component of success is strong internal social

⁷ *"Together: The Rituals, Pleasures and Politics of Cooperation"* by Richard Sennett, Penguin, 7 February 2013

⁸ *that we shall address in a future recommendation*

monitoring by peers of collectively-defined values, together with a certain moderation in competition over quality and finally the maintenance of a scientific identity shared by all staff, with a real commitment to the organisation. We know that the art of getting on together in a laboratory or an institute can be jeopardised by tensions within or between teams. The conditions for creativity and well-being are strong components of the management policy: everyone—from the head of a large institution to the laboratory director and team leader—has an essential role to play in maintaining momentum and a state of mind conducive to the development of employees' potential, avoiding the traps of internal competition.

3. Exemplarity of excellence in science outreach

Today's society, which is considered to be one of knowledge and intelligence, is increasingly faced with major challenges in the fields of energy, environment and health, where science has a key role to play. In France, the number of people with a good level of scientific knowledge remains insufficient, both among politicians and the general public. There is a need to broaden this core, which forms the base of a pyramid whose apex is research at the highest level, and which is deployed in a context of pressure from other national needs such as capacity building. Indeed, the reticence of the population towards science in general, and science players in particular, should not be underestimated. Proven results are challenged by individual opinions, the benefits of many technologies for everyday life are forgotten or misunderstood. Yet we are obviously entitled to expect a great deal from the work of scientists at all levels to meet the challenges of tomorrow's society. All those involved in research, whatever their level, have a duty to raise the overall level of scientific knowledge in society, whether high school students, the general public or our political representatives. Particular attention should obviously be paid to young people, as they are the talent pool from which future researchers and engineers will emerge. However, science and technology careers are not sufficiently attractive. The time spent outside their community by those who wish to be involved in science outreach—which is taken from their research time—should be recognised in their career assessment (see COMETS Opinion 2014-28, “Ethical issues affecting public research professions undergoing change”). In this respect, the visibility and exemplary nature of the model represented by the most prestigious laboratories and the best-known researchers imply certain duties. The communication of their research, and more generally of the scientific process, to the general public can be seen as a necessity. Some winners of the Nobel Prize, the Fields Medal or other major awards (including those for women scientists, etc.) have understood this and are playing an important role in spreading a positive image of science and passing on their passion for it to as many people as possible.



III. Recommendations

1 - The misuse of the term 'excellence' in all circumstances has diluted its meaning. For the functioning of research, its use should be limited and replaced by concepts such as quality, high standards or competitiveness.

2 - Any advantage, selection, reward, bonus or allocation of funds based on criteria of excellence implies the implementation of rigorous and transparent assessment procedures, in particular with regard to the publication of results and the names of beneficiaries. By definition, excellence implies differentiation: it is therefore essential to demand from reviewers themselves these same principles of excellence in their assessment. It is recalled that assessments should be based on qualitative criteria and not exclusively on bibliometric indicators (see COMETS Opinion 2014-28).

3 - The policy of excellence and associated funding must provide sufficient basic support and human resources for quality teams that do not meet the stated criteria of 'excellence'.

4 - High-level research requires responsiveness to new, sometimes highly original, themes that may be anything but mainstream. The supervisory authorities should encourage this ability to adapt quickly by facilitating the mobilisation of teams around these subjects (encouraging mobility, accelerating funding).

5 - The sustainability of high-level research must be ensured. The rationale of calls for tender too often leads to the pursuit of ever-new subjects that are driven more by trends than by the harnessing of resources. Short- or medium-term projects should be allowed to continue when they have produced important results. More generally, the skills of good teams need to be maintained.

6 - The prospect of excellence quite naturally develops individualistic behaviour. Yet high-level achievements are rarely the product of a single individual, but usually the result of collective efforts. It is important for laboratory directors to encourage teamwork and team spirit, possibly with the support of National Committee leaders. Moreover, the mechanisms for rewarding research quality are generally based on individual promotion through awards, medals, bonuses, contracts, etc. It would be fairer to allocate some of this to research teams, whose contribution tends to be forgotten.

7 - The competition arising from the race for excellence can lead to an increase in misconduct within laboratories. It is important to be aware of the importance of ethics in the training of research staff and to set up appropriate courses.

8 - Researchers who are considered 'excellent' have a special responsibility to the scientific community as well as to the general public. They are actually considered as role models, and their exposure also implies duties in the communication of their research, and in more general outreach to young people, the general public and policy makers about the scientific process.

