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Autonomy and Independence; Key Concerns for an Academy of Sciences and Humanities

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Introduction

The first Academy of Sciences was created by Plato in the 4th century before Christ. The location was actually a grove outside Athens where the hero Akademos was honoured, and where sport and exercise were practiced as an essential part of young men's education. When Plato chose that piece of ground he was not primarily interested in continuing physical training of this kind, but in providing a school for the practice of philosophy, which he considered essential for a properly functioning political and governmental system.

There is more symbolism in this onset of Academia: The grove from which academies take their name was situated just outside Athens, outside the center of public life. A walk in that area afforded excellent scope for philosophical reflection, inspired not by a wish for isolation, but by the desire for independent research and reflection. Both now and at that time, this independence is and was a matter of immense significance, not only concerning scientific analyses and evaluations, but also concerning the Academy's advisory activities in particular. The emperor Justinian did not realise that he was curtailing a vital source of political life when he closed Plato's *Akademeia* a millennium after its founding, because its views were not in line with his own, and therefore considered injurious to his ruling.

In the following, I hope to demonstrate that this independence and autonomous position of an Academy are of crucial importance in respect of its contribution to the advancement of science as well as to the welfare of society and humankind.

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Science and policy-making: Two different worlds

The clear distinctiveness of science and policy-making should not be questioned. In the former, the principal norm is verity and the motivating force, the search for the truth. Policy-makers are led by political calculations, utility, moral attitudes and value preferences. They may listen to scientists and may use their findings, but the ultimate criterion is political feasibility and attainability and not veracity.

I do like to emphasize that the distinction is not to be regarded as that between certainty (of knowing) and uncertainty. It would be a misunderstanding if scientific input were to be mistaken for certitude and definite knowledge. There is, of course, solid and experimentally validated knowledge. But more often the scientist's knowledge is less solid, uncertain and incomplete. And in particular with respect to many sensitive and pressing questions in society, this knowledge is certainly of a probabilistic or contingent nature, due to either ontic (really existing in the outer world) or epistemic (insufficiently measured or known) uncertainties. Needless to say, feckless claims and unjustified solidness with respect to this probabilistic and uncertain knowledge are harmful indeed.

It is important to keep this distinction in orientation between scientists and policy-makers in mind when the advisory role of science is at stake, and in particular when scientists are asked to give their opinion on sensitive and weighty political issues. They can offer proper and careful analyses of the problems at hand, they can point to the (high or very low) probabilities regarding certain outcomes and risks involved, they can denounce stereotypes and prejudices, they can show that certain anxieties have no statistical justification, or that great optimism is not warranted given the available evidence, but they should not take over the responsibility from the actual decision makers. It is not up to the physicist to establish whether or not nuclear energy should be exploited. It is not up to the ecological biologist to decide on the maximally permissible level of automobile exhaust gases. It is not up to the psychologist to decide whether deeply depressed, incurable patients should be allowed euthanasian termination of life. Then we would require too much responsibility from scientists. As Wolpert (1989) once said, it would give power to a group that is neither trained nor competent to exert it.

Breaking the rules

The distinction, as defined above, should be acknowledged by both parties - the scientist and the policy-maker that seeks advice from the scientist. Confusion of the two spheres leads to disordered argumentation, to a false impression of things and to obscure decision-making.

Sometimes it is the policy- and decision-maker who breaks the rules separating these two spheres. He starts arguing against scientific facts, or about scientific interpretations. Sometimes he engages other scientists who are willing to argue against unwelcome research findings. Examples are medical researchers' subversive activities in the service of the tobacco industry *vis-à-vis* the research on passive smoking's effects, or the Bush Administration's scientific advisors attacking the Kyoto Treaty's scientific assumptions.

But for our purpose it is more interesting to have a look at those scientists who seem to be breaking these rules. Does it occur, and if so, in what form? We can distinguish three types of 'trespassing' that differ in the extent to which they violate science's independence criterion.

(1) A first category is constituted by researchers' tendency to focus too emphatically on the policy and practical implementations of their research. The operative word here is the adverb "too". I am not suggesting that scientists should refrain from contemplating the useful application of their findings. On the contrary, I have time and again repeated that scientists' responsibility for what happens with their results goes beyond their laboratory doors. But the line between scientifically substantiated conclusions for policy and personal preferences and opinions is thin. Mixing the two makes the debate on *scientific* input's added value confusing.

(2) A second danger is caused by scientists who give their opinion on political and social issues without speaking as (applying) scientists. They give their opinion (often in the popular media) on issues for which no empirical evidence is available, or at their disposal (for instance, because it is not their field of expertise). Nevertheless, when speaking as scientists, this creates an illusion that such evidence is available. The words of esteemed scientists (Nobel laureates are often abused for this purpose) will have a particularly strong impact. Of course, scientists have a right to express their opinion on political and social issues like every other citizen, but the misapprehension that their opinion is more valid than that of other citizens should be dispelled.

(3) A third, and the most serious, violation of science's independence is the attempt to reach conclusions that are welcomed by and favourable to the policy- or decision-maker. This can take the form of straightforward *fraud*, including the fabrication, falsification, or trimming and selective use of data. It can also take the form of what can be called *deceit*, an attempt to lead the reader up the garden path by, for instance, deliberately violating the rules of data analysis and processing, by gross negligence in sampling, or by incorrectly suggesting that conclusions are based upon empirical data (see also Drenth, 1999).

As indicated, the most serious violation of science's independence is caused by the third category in which science's integrity is gravely endangered. Of course, this can be rooted in personal factors, such as dysfunctional ambition, vanity, desire for recognition, or personal gain. But in line with our argument, we would rather focus on the external pressures brought to bear by influential policy-makers that give rise to such infringements of independence.

Causal factors

The following two categories of external influences can be distinguished:
(a) The first is the pressure from powerful institutions or persons who oppose an honest analysis and reporting of the research. And this is not just a reference to history with such well-known examples as Galileo, More or Lysenko. Also today, and perhaps notably so, there are examples of the political intimidation of scientists. Hard data are difficult to find regarding how widespread this phenomenon is, particularly since the pressure can be rather subtle and unobtrusive, and since the 'victims' are not always prepared to bring it to light. But sometimes the latter do make their grievances public, and cases in point are published either in the scientific or in the popular media.

A few years ago, the *New England Journal of Medicine* described how the pharmaceutical industry lobby applied undue pressure on researchers who intended to publish data that it found unwelcome (Deyo et al., 1997). Recently we could read about the complaints of the American Union of Concerned Scientists (UCS) regarding the manipulation of the process through which science enters political deci-sions (*The Economist*, 10-4-04). Although President Bush's science advisor

John Marburger has tried to rebut these claims (*Nature*, 428, 8-4-04, *Science*, 305, 30-7-04), many of them still prevail, one of the notorious cases being the eminent cell biologist Elizabeth Blackburn's (University of California, San Francisco) dismissal from her position on the President's Council on Bioethics, because, she claims, of her outspoken support for research on human embryonic stem cells. I am sure all countries have their own and well known cases. In my own country, for instance, we recently had the experience of the geophysicist Berkhout, the chairman of a scientific committee that was to advise the Minister of Transport on Schiphol Airport's new noise criteria. Berkhout declared that after having been put under pressure, after having been quoted incorrectly, and after having to endure personal attacks in the media, he had decided to resign from the committee (*NRC-Handelsblad*, 2-12-03). A few years earlier Köbben and Tromp (1999) had published a number of such cases in their book titled *The Unwelcome Message.*

Sometimes the pressure on researchers is not aimed at distortion of research results towards certain desired outcomes, but at the decision not to deal with certain subjects in the first place, so as not to run the risk of attaining certain unwelcome insights. Again, each country has its own striking examples. A ban imposed by a 'politically correct' university council in the 70s to prevent a criminologist (Buikhuizen) from doing research on criminal behaviour's possible biological determinants, and the societal pressure on brain researchers to stop further research into the differences in the hypothalamus between homosexual male subjects and a non-homosexual control group (Swaab & Hofman, 1990), are cases in point in my own country. The issue has become of topical interest at present, since the threat of terrorism and national security have an effect on the freedom of universities in various countries. In the US, university officials fear that regulations controlling research, and particularly the involvement of and communication with foreign scientists and students will be further curtailed (*Science*, 304, 23-4-04).

A special case is the restriction on research results' publication. In principle all research carried out by publicly funded institutions (universities, research institutes) ought to be made accessible to the wider public. A clear and acceptable exception could be national security or defence interests. It is clear, however, that the extent to which these criteria are interpreted may lead to strong differences of opinion

between governments and scientists, of which the present ongoing debate in the US is a good example.

Sometimes the sponsor of the research expresses a requirement or desire to keep the research results secret, at least until a possible patent application can be submitted. Since this is a special aspect of a larger problematic concerning contract research, which will be dealt with later, we will not discuss this here in greater detail.

(b) In the second place there are economic and financial motives and interests. Economic interest in research into, for instance, new medicine and pharmacology, into nano-techological developments, and into other innovative or patent-directed research can be substantial and can exert unwarranted pressure. Here, too, recent history offers a series of striking examples, varying from the thalidomide tragedy to the Chernobyl disaster and the exploded NASA explorer. Sometimes the influences are subtle and wholly unknown. The *Times Higher* of 27-04-01 revealed that at least 19 review articles published by the highly esteemed *New England Journal of Medicine* had been written by researchers who had secret financial links to the pharmaceutical companies that had brought the examined medicines on the market. In a recent book on the perils of commercialisation, the former President of Harvard University Derek Bok (2003) expressed his belief that the intrusion of the marketplace into the university is eroding fundamental academic values.

At this point it is appropriate to formulate a word of warning in respect of contract research at universities and research institutes that are subsidised by the government. Until a few decades ago, these institutions could almost always rely on public funding for most of their activities. Nowadays, however, they increasingly have to look for assistance from private, external funds. In principle this need not be wrong. It is quite possible for contract research to be independent and unbiased, and to be executed strictly according to the scientific rules of the game. Contract research, therefore, does not necessarily imply an encroachment on research's freedom and autonomy, but the latter can be in jeopardy if a growing proportion of a department, or institute's structural financing has to be obtained externally. After all, results that can be used to the sponsor's benefit are more likely to lead to follow-up research and new contracts than results that are disappointing. Obviously, the overriding temptation is to avoid biting the hand that feeds you.

Maybe a distinction between two different kinds of contract-research is helpful in this respect. The first has the finding of new knowledge as an objective. Of course, the sponsor does hope that this will lead to useful applications, technological innovations, or patents. But the basic objective is augmentation of knowledge. This type of contract research suits the objectives and conditions of academic research at universities or research institutes well. The only debatable point is the wish to keep the research outcomes secret so as to submit an eventual patent application. There is room for negotiation here. The basic objective of university research should be to contribute to public knowledge, therefore the research results should eventually be published, but some delay in publication can be permitted to allow for such a patent application.

Secondly, there is contract research that is prompted to legitimise a political preference or decision. In such cases, sponsors are not so much interested in the objective truth, but rather in arguments that support their view, attract votes, or can be used to oppose difficult opponents, or to answer tricky questions from stockholders. In principle there is nothing wrong with scientists who offer their service to industry, political parties, or a country's administrators, and some of this will sometimes be one-sided or biased, although such services can also be defended as mostly being the best, rendered by honest and unbiased research. Anyway, the kind of legitimising research just described certainly does not belong at universities or research institutes where the search for *the whole truth* should prevail.

Conclusion

In this presentation we have advocated autonomy and independence of science and scholarship as important conditions for a real and valuable contribution to policy making. We have also seen that there are major threats and dangers to this independence in modern times. Resistance against such encroachments will remain an important challenge for scientists and their Academies.

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