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THE SCIENTIFIC INTEGRITY OF APPLIED RESEARCH

ABSTRACT. This paper reviews some of the threats to scientific independence in the Netherlands that have recently alerted the scientific community. The problems are not only apparent in research requested by the government or local authorities; they are also found in a variety of research fields. They are essentially related to the increasing dearth of research funding in the universities. In Europe in general, and the Netherlands in particular, there are no large, independent research foundations which exist elsewhere, so research funding generally depends on funding by government, local authorities or industry. The problem has long been underappreciated and no effective action has been taken. However, more recently and as a consequence of media reports, a number of drastic measures are being taken. This paper deals first with the nature of the threats to the integrity of scientific research, and then reviews the type of actions that have been, and could be taken.

KEY WORDS: applied research, exact sciences, research for big business, research for official authorities, social sciences, threats to integrity

1. INTRODUCTION

There was a time in the Netherlands when all important research was done by universities. These used to fund their own research, whether it was conducted in the social science or natural science faculties. Naturally, such research was rarely directly relevant to policy makers, either in government or industry. But societies change and since about the 1980s two particular developments have slowly put an end to the situation of exclusive academic research.

First, there was a growing need among governments and in parliament to have access to research information in order to build on, to support and possibly to amend policies. Second, there were similar needs for research in private business, such as the pharmaceutical industry, which expected to increase its profits in this way. Both developments, however useful they may be, imply some serious threats to the integrity of researchers and to the scientific independence of commissioned research. They may lead to research of dubious quality, to the proliferation of marketing bureaus as well as to questions about the independence of researchers and even of universities.

In this paper I first consider the arguments pleading for the existence of a government research centre, the objective of which is to conduct what is called 'policy research', serving to enlighten the government on policy issues and to propose possible solutions and actions. Second, I examine

the arguments against such a centre, the central question in the paper being the issue of the scientific integrity of researchers and how to guarantee it. However, there are also other important questions, such as the intrinsic usefulness of such research and the use politicians make of it. Third, I deal with threats to the independence of researchers coming from two different sources, where a distinction should be drawn between research commissioned by political authorities and research requested by industrial concerns and private business organisations. I conclude by formulating some solutions to what is in some respects a worrying situation, because if research centres and universities do not take serious action to insure their scientific integrity they will lose their credibility, not only in the political or industrial world, but also, and even more importantly, with the general public.

1.1. A Government Research Centre

Institutionalised, policy-relevant research started in the Netherlands in the 1980s. At the start of the 1980s the Minister of Justice invited Professor Wouter Buikhuisen, who taught Criminology at the University of Groningen, to come to the Hague and accept a post as a senior civil servant, his main task being to develop a research centre that would work exclusively for the Minister and the Department of Justice. At that time the universities did not want to conduct research at the Ministry's request: judicial policies were subjected to severe criticism and conducting research for the Ministry was considered contaminated work. Moreover, persons who would conduct what was called applied research were considered by their colleagues to be second-rate researchers. The term most used in that respect was 'Government criminology' as opposed to university criminology, which was supposed to be fundamental and of higher quality. This attitude should be understood in relation to the privileged situation enjoyed by the universities in the 1960s and 1970s and the circumstance that they had their own research budgets and were not pressured to seek funding from outside parties. This means that they could afford to cultivate a condescending attitude with respect to this type of research as well as with respect to researchers who conducted it. In addition, in those rare cases that universities accepted government work, they frequently did not respect the details of the research contract, in particular the requirement to finish the study on or before the stipulated date.

On the other hand, the authorities had a pressing need for policy recommendations on complex issues, based on scientific research which the universities could not or would not deliver. This need was related to the increasingly important role that public authorities played in social life in general and with respect to the police, the probation service and the Youth protection service in particular, a role which was a direct consequence of

the rise and development of the Welfare state (van Dijk 1982), implying a multiplication of services to the public rendered by the state. Aware of the fact that, since the 1960s, there had been a huge increase in crime, juvenile crime in particular, the Ministry of Justice realized that the usual policies were inadequate in dealing with the situation: they could not be continued and there was a need for scientific contributions. A complicating matter at that time, in common with most of Europe, was that the majority of Professors of Criminology were lawyers who were not particularly interested in research. In fact Buikhuisen was an exception: he was the first psychologist to be appointed as Professor of Criminology, which indicates that up to that time the social sciences with their empirical tradition had not yet penetrated Dutch Criminology. Moreover, Buikhuisen was particularly interested in both policy problems and applied scientific research. He had conducted a series of psychological experiments on to traffic safety, one such study showing quite clearly the negative consequences of even very minor alcohol consumption on the driver's visual alertness. These studies resulted in considerably more restrictive legislation on driving after having consumed alcohol. As expected, Buikhuisen was interested in the new position and accepted the offer from the Minister of Justice, but not without stating specific requirements upon which his acceptance was conditional. For example, he wanted the freedom to personally select the researchers for the new centre because he wished to guarantee their intellectual level as well as their methodological training. In order to be able to engage quality researchers he claimed for them the right to publish articles under their own name, to speak on the radio or appear on television. He also sought a guarantee that all studies would be published and that the staff of the centre – and not some civil servants – would decide on the content of the publications. In other words, what he tried to achieve for the government centre was maximum openness and transparency, since he considered – rightly – that this requirement was the *conditio sine qua non* for the credibility of such a centre, both in parliament and among the general public. The Minister of Justice accepted the conditions and I have to say that from its start in 1973 and during the almost 20 years that I have been working in the centre, these conditions have to a large degree been respected by the Ministry's senior personnel, although they never went unchallenged and the centre had to stand up for them on a number of occasions.

1.2. How Did This Transparency Work in Practice?

One element was that, after a period of 3 months in which the Minister of Justice and the department could work out a reaction to a report, the centre then sent all its reports directly to the permanent Justice Commission in Parliament. In addition, whenever the outcomes of the study were

unexpected, related to current problems or had real political importance, we issued a press release or held a press conference. Researchers also regularly gave interviews on radio or television. An important reason for the Minister's not interfering in the way the centre operated was that, in order to maintain his credibility in Parliament, he could not allow himself to dissimulate research outcomes, even if he did not like them. Such interventions invariably leak and the consequence would be that he would no longer be able to make an appeal to the centre's research outcomes to justify his policies or to convince Parliament of the need to take specific measures. This does not mean that there were never conflicts or pressures: with this type of research there always are. The reason is – and this is precisely what distinguishes fundamental research from applied research – that the consequences of policy research may basically have far-reaching political and financial consequences.

2. WHY A GOVERNMENT RESEARCH CENTRE?

The centre's founders were profoundly convinced that the social sciences had an additional mission besides the task of conducting fundamental research and advancing scientific knowledge, which is to serve society and to make a contribution, however small, to a somewhat fairer, more humane and more rational society. Although that was probably a rather naïve idea, it has been a *Leitmotif* of our efforts. One might say that a number of postulates underlie this type of judicial and criminological research (Junger-Tas 1979).

The first is the existence of a certain consensus on the main goals of criminal justice policy, which might be summarised as the protection of society and the state of law as well as the life and possessions of individual citizens. The operationalisation of these goals is found in penal law and more concretely in the criminal justice system. In the Memorandum accompanying the annual budget in 1977, the Minister of Justice made these goals explicit, recognising that in the final analysis these are determined by the general values and norms that express the way in which we wish to organise our society. In this logic the essential objective of policy research will always be to contribute to the realisation of these goals, the essential assumption being that the system is sufficiently transparent to be able to study it (van Dijk 1982).

The second postulate is that assisting policy by means of research is absolutely necessary in our actual society. This postulate has its origin mainly in the century of Enlightenment. It implies that one can study social phenomena with the methods of the physical sciences. This in turn implies an emphasis on science and technology in relation to a rational view of men as well as emphasising a faith in the possibility of examining social

life by scientific methods (Berting 1990). Significantly, the use of reason as materialized in research should lead to a better relation between the objectives that have to be realised and the means that are used, rather than the simple use of past experience and common sense. For example, evaluation research enables us to learn about our mistakes much more quickly, and to profit much earlier from a new and effective approach than any other method. In reality, the confidence we have in policy research flows logically from the efforts we make to solve society's problems rationally. We have opted for a society which, while testing a specific solution to a definite problem, evaluates this solution, then applies a modified approach and evaluates this once again. This evolutionary process is an expression of what Coleman (1972) has called a 'scientific' society, which is a society that uses scientific methods to change itself.

The question here, however, is what the real contribution of science to policy making can be. I think that a primary role of researchers is to assist civil servants to translate and formulate the problems they are confronted with in terms that can be studied. Sometimes the problem at hand is related to a second problem or stems from a much more fundamental one. Sometimes a quick answer is demanded to a complex situation, which would rather require an in-depth study. Anyway it is necessary to clarify the underlying question and to examine whether this question can be studied. In this respect one of the most useful roles of a government centre is to evaluate new penal measures (Junger-Tas 1993). The ideal format in this field is to introduce innovations in penal policy under experimental conditions in order to be able to evaluate them, then to modify these as a consequence of the evaluation, and only then to change the law. We have succeeded in following this model several times, among them the introduction of Community Service in penal policy. As a consequence of the evaluation, the new sanction was modified and only after this process was the modified sanction adopted in penal law. In other cases, though, policy makers were too pressed by the political process and did not want to wait for research results.

3. FUNDAMENTAL AND APPLIED RESEARCH

If one wishes to pinpoint the differences between fundamental or theoretical research and applied research, one realises that the research methods of the social sciences have been developed for the disciplines themselves – more precisely for generating and testing hypotheses serving to support, modify or innovate theory. Indeed, these methods have not been developed for doing applied and evaluative research on government measures (Coleman 1972). Since Coleman wrote that, however, there has been considerable progress and there is now an extensive body of knowledge referring to evaluation

research and more recently to specific methods applicable in prevention research. The most important distinction between theoretical and applied research, however, is that the former addresses scientific questions, such as the accumulation or extension of knowledge, and aims at theoretical conclusions, while the latter addresses political and policy decisions, and as such is action-orientated. So there is an essential difference in objective between the two research methods. Since theoretical research is restricted to the discipline itself, it is there that the study object and its objective are found, and the results have to serve the discipline's progress. Outcomes are disseminated in scientific journals, books and occasionally find their way into the mass media, while a possible impact on social practice may be a secondary objective but is certainly not a primary, nor the most important goal.

Applied research, on the other hand, finds its subject outside the discipline, in social reality. Its results are addressed to practical policy and the aim is to improve policy, commonly within the framework of the prevailing values and norms in society. The specific properties of this type of research refer to both research domains and depend on the capacities of the researcher to reconcile the two. Besides these fundamental differences, however, there are other distinctions. For example – and importantly – social reality is situated in a specific time period. Consequently, the decisions to which research may contribute are constrained by that same time period, which means that policy decisions will not only be determined by the study, but also by unexpected new events that may interfere with its outcomes. Another problem refers to the interests of researchers. There is an on-going, fierce competition among university researchers for status and social position within the discipline, while in social life the main conflicts refer to conflicts of interest between social groups controlling certain resources. This circumstance implies that research outcomes are never neutral, but may contribute to changing the existing power structure in a specific field. In his book, Coleman (1972) listed a number of basic principles that should characterize applied research, of which I recall the following:

- Political decisions have to be taken at a specific moment in time and cannot be based on information that reaches decision makers after that decisive moment. This is why partial information, available at the moment when action is required, is more useful than complete information that arrives too late.
- The value of research outcomes resides rather in the fact that one is able to present adequate guidelines for action than in methodological sophistication and theoretical parsimony. This means that applied research has to use the solid methodology of the social sciences, resulting in outcomes with a high degree of probability, rather than sophisticated

methods requiring a great number of preceding assumptions that are seldom realised in social reality.

- Data collection should be based on multiple sources and a variety of methods should be used to analyse the data. To the extent that partial outcomes are pointing in the same direction, one may have more confidence in its global conclusions.
- Although theoretical research distinguishes independent and dependent variables, applied research differentiates among three classes of variables: 1) policy outcomes; 2) political variables, i.e., those that are controlled by politicians; and 3) situational variables, which are outside the control of politicians but have to be controlled by the researcher. It is very important to distinguish variables that may be manipulated by politicians from variables that cannot be influenced, since the latter may render any policy action impossible.
- Applied research includes two conversion processes: the conversion of a practical and policy problem into a research methodology and the conversion of research outcomes into social and political reality. The values derived from social practice determine the formulation of the political problem, but the essential and intrinsic values of the scientific approach, such as objectivity, transparency, and replicability, must determine the execution of applied research.

Does all this mean that applied research does not contribute at all to the development of the social sciences or criminology? I don't think so, as witnessed, for example, by the development of victimology, greatly stimulated by the victimization surveys systematically organized by government centres in the UK, the Netherlands and Finland. Since then many universities have come to participate in such studies. Another example is the in-depth studies of sub-systems of the criminal justice system, such as the operation of the police, the penitentiary system, the probation service or the way prosecutors and judges take decisions. A third example is the enormous development of the specific methodology of evaluation research on experimental interventions in social reality.

4. PROBLEMS IN GOVERNMENT RESEARCH

Applied research on behalf of national or local authorities, however, does not only have supporters, and universities have formulated a number of criticisms as well as warnings about the dangers that threaten this type of study.

A first observation refers to the applicability of the research. In this respect there exist a certain number of criteria, such as the question whether authorities are really interested in solving the studied problem, whether

those who commissioned the research have sufficient political power to bring about change, and whether there is funding available for change (Welters 1978).

Another point of criticism is that the distance between policy decision makers and researchers is usually too great for the study to really have an impact on political decisions. This is the reason that in our centre we used to have regular meetings with the appropriate departments. The frequency of our contacts with policy makers resulted in more ready acceptance of the study's outcomes, even when they were negative, and it made a real impact on policy decisions possible. The danger of such a procedure, however, is that it increases a tendency among researchers to perceive the management and political problems of the Ministry as if they were their own and so they may end up lacking critical distance, because as the saying goes, 'To understand everything is to forgive everything'.

Related to this question is a difference in conception about 'the truth'. For a Ministerial or multinational bureaucracy, outcomes that do not disturb the Minister or the internal or external organization of that bureaucracy are 'truthful'. That is one reason why penal interventions that are received enthusiastically by the general public will always be valorised, even without any evidence that the programme has achieved any legitimate political objectives. In addition, to a politician all research outcomes that reinforce his power position are by definition valid outcomes.

A practical difficulty for the conscientious researcher is the sudden occurrence of a burning policy problem to which he has to respond in a very limited period of time, if not immediately. Such research can only be superficial and has little reliability. On the other hand, if solid and serious research into the matter reaches policy decision makers at a moment when the decision has already been taken, it is not very useful. This is one of the reasons why policy makers are making increasing use of commercial marketing agencies. My experience with these agencies has taught me that their studies are usually conducted hastily, that their methodology is rather weak, that their outcomes are those we would have expected even without any study at all, and that their recommendations above all please those who commissioned the research. This does not mean that academic and university researchers don't fall into this trap, though. Too often they accept the definition of the problem as it has been given by those who fund the study, without any critical examination of the validity of that definition. Moreover, in today's society researchers know exactly where they can find funding and they are often ready to embrace any question 'à la mode', susceptible they are to raising money. For example, in the United States we have seen successive trends in research topics, which were directly influenced by the agenda of the country's criminal justice administration. This explains the different waves of research on incapacitation and career criminals, followed

by research on drugs and now, of course, on organised crime and terrorism. There is indeed a danger in allowing (funding) administrative authorities to decide exclusively on research topics, since this may seriously restrict the field of research.

A real threat to the scientific integrity of applied research is the fact that the mandated study often operates as an alibi for policy decision makers, as when the Minister has to meet some requirements of Parliament. In these cases the study often serves to delay difficult political decisions *sine die*. In some cases the study also serves to justify decisions that have already been taken. Obviously, such studies will not have any real impact on policy making. Finally, sometimes the main function of commissioned research is simply to increase the influence, power or income of those who commissioned the research, which is particularly – but not exclusively – characteristic of industrial research.

One hidden objective of those who mandate a study is that the research outcomes have to maintain and consolidate their bureaucratic system. If there are successful outcomes, these are rapidly communicated to the Minister, the staff and the media. If, on the other hand, the outcomes show serious policy shortcomings, or worse the failure of policy measures taken in the field under study, the report is often sent back to the researchers with the suggestion that the methodology followed might not have been correct and – in particular – requesting revisions.

Another problem that arises if researchers don't know the bureaucratic system very well, concerns the recommendations – a crucial aspect of the whole study. Although they are perfectly capable of pointing out the problems with which policy makers are confronted, they have considerably more difficulty in formulating various options to meet these problems, let alone solve them. On the other hand, policy makers may not always appreciate the researchers' recommendations, judging this to be their own prerogative. As a solution to this dilemma, recommendations often tend to be somewhat meaningless so as to spare sensibilities. In that case they have two characteristic elements: 1) the well-known formula that 'more research is needed to really analyse the problem', and 2) the recommended policy measures concern other Ministries or departments than the one that commissioned the research. Finally in fact, many decisions taken at the political level, as well as at the level of other bureaucracies, have some irrational aspects, which of course do not particularly create a climate that is beneficial to rational recommendations.

5. TWO EXAMPLES OF THREATS TO SCIENTIFIC INTEGRITY

It should be realised that many criticisms addressed to government research are also valid with respect to research done for the business world,

although in the latter case the danger for those who commissioned the study does not reside in possible political risks but in the risks of the market, essentially income losses if the study's outcomes are negative. To the extent that universities don't dispose of the necessary finances to develop their own research programme inspired by academic, theoretical, or even social interests, the only solution is private funding. This why the existence of research foundations, unrelated to government or industry, is so important, since these allow the development of fundamental research and consequently real progress in the social sciences. In Europe, though, there is a lack of such independent research foundations, and as far as applied research is concerned, researchers are often forced to address either the state or business enterprises in order to get funding.

In 1999 two well known Dutch anthropologists published a widely acclaimed as well as severely criticised book, showing for the first time the reality of the threats to scientific independence, in this case by political authorities (Köbben and Tromp 1999). Some researchers, university staff in particular, reacted by vehemently denying the existence of such practices. Some even criticised the study, accusing the authors of not giving any indication of the frequency of these threats. However, the authors observed that this was impossible to measure. If they had conducted a survey among researchers there would have been doubts about the validity of the answers, since most researchers who were unduly pressured by policy makers would not be willing to admit it, so the extent of the threats remains unknown. Indeed, it has to be said that, at that moment in time, the book gave rise to a massive reaction of denial on the side of researchers as well as outright criticism by university heads, who feared their funding source might dry up! At this point in time, however, nobody would any longer express doubts about the reality of the power play between funding agents and researchers.

My first example refers to the threats to scientific integrity by public authorities. It deals with a scientific commission which was to advise the relevant Minister (on Traffic and Water Management) on the possible extension of Schiphol airport, an international airport that is constantly striving to expand its action radius. In this respect it is important to observe that the airport is not completely privatised since the state still possesses the majority of the equity. The problem was that the board of directors of Schiphol, which at the time had four runways for aircraft departures and landings, wanted to construct a fifth one to be able to handle a greater number of aircraft. A complication is that Schiphol is situated in a very densely populated area of the country, so both incoming and departing aircraft cause considerable inconvenience to residents because of the noise they produce. In order to meet citizen's complaints, the government had established certain acoustic standards specifying the threshold of sound intensity which Schiphol was not permitted to exceed. These were measured

by a number of special acoustic indicators dispersed in the Schiphol area. However, dissatisfied with the acoustic threshold standards, both Schiphol and the government proposed new legislation, changing the places where the aircraft noise was measured. This was supposed to decrease the level of noise that was measured and, as a consequence, would allow the construction of a fifth runway. The Minister in charge of this portfolio supported the project for obvious political and, particularly, economic reasons, but when Parliament was confronted with the Schiphol plan there was fierce opposition. Parliament feared increasing problems with the residents of the Schiphol area, since the system of acoustic standards had been established to protect residents and their assent was an absolute precondition for enlarging the airport. In 2000, under great pressure from Parliament, the Minister created an expert commission chaired by a nationally and internationally widely respected expert on acoustics and geophysics, with the mandate to examine the question whether the new proposed system of acoustic standards would offer residents better protection than the old one in terms of the level of aircraft noise. When the commission was installed, the Minister emphasised the importance of a procedure that guaranteed its maximum independence and transparency.

Unfortunately, the first outcomes of the survey did not confirm the Minister's political promises to Parliament and the resident population, since they demonstrated that the old system gave residents considerably better protection than the intended new system. The Minister was clearly dissatisfied and, despite these negative outcomes, succeeded in convincing Parliament to vote for the new law, changing the existing system, by reassuring Members of Parliament that the commission would be charged with its evaluation – in all independence, of course. If the commission should find shortcomings in the new law these would be remedied immediately. In 2002, however, the Minister's successor in a new cabinet, confronted with the promises made to Parliament, decided to restrict the commission's mandate in the Schiphol area to a few locations only. In addition, the commission no longer had the right to collect independently the information needed for the survey: all information would now be supplied by the Ministry.

In reality, since the dissemination of the first report in 2001, political pressures on the commission by the authorities were intensified and may be summarised in terms of three main elements: 1) increasing pressure on individual members of the commission; 2) citing the commission's report incorrectly, correcting this only after the new law had been adopted by parliament; and 3) insinuating that both the members of the commission as well as its chair were prejudiced and ill-willed. The Ministry continually tried to change the content of the report and when this failed, the report's conclusions were distorted. The commission, however, persisted

in concluding that the new law did not meet the promises made to Parliament and to the Schiphol area residents, but when the commission finally realised that the political powers had no intention whatsoever of giving any consideration to these promises, the only way out was to return the mandate to the Minister. Of course, since then Schiphol has constructed its fifth runway, but the inevitable conclusion is that both Parliament and the general public have been deceived. The important question now is whether there are lessons to be drawn from this blatant failure to have an impact on policy by a scientific endeavour to evaluate policy measures and recommend specific policy options.

A first conclusion is no doubt that where crucial political and economic interests are at stake, the conclusions and recommendations of any study have been decided in advance. A so-called 'independent and scientific' commission is in fact supposed to deliver a report justifying and legitimising the course of action that has already been planned. Unfortunately, the truth is that some experts are often resigned to doing so, the pressures on them being too great. In these cases an expert commission operates as a scientific façade for political decisions that have already been taken at the government level, but which are controversial at the level of Parliament and the general public. This is a serious matter, since the process of well informed, responsible political decision taking by Parliament, as the representative of the people, requires correct information on the important issues at stake. It does not mean at all that the researcher has to put himself in the policy maker's place, just as the policy maker should not interfere with the research process. Each has his own responsibilities: that of the researcher is to present the politicians with correct, objective information, based on appropriate scientific analyses, as well as recommendations aimed at the realisation of the objectives as they are specified in the research mandate. Policy decision makers may of course decide differently on the basis of normative considerations, such as other important interests, consideration of eventual political acceptance of recommended measures, economic feasibility and financial constraints. In that field research no longer has a role to play and researchers should be resigned to accepting political decisions. What is unforgivable, however, is to change the order of procedures: that is, to first take the political decision and to make clear to researchers that they have to find the necessary arguments that will legitimise it.

However, it is not only government research that we should worry about. There have lately been a number of worrying signs about the collaboration between industry and research. Most of the following examples have been widely publicised in the press, raising great concern about researchers' independence.

For example, the university hospital of the city of Utrecht discovered in October 2003 that one of its liver disease specialists, conducting

experimental tests of new equipment to cure a specific liver disease, had continued to conduct his experiment, even after a number of his patients were showing very serious, harmful side effects. Moreover, he had not respected existing procedures for continuous control of the conditions of experimental tests, which might have resulted in the study's suspension. An inquiry revealed that the specialist had a financial interest in the company that had delivered the equipment. The experimental treatment was halted and the specialist had to leave the university. Another example is that of researchers attached to the university hospital of Amsterdam, who denounced the pharmaceutical industry (in this case Organon) for having manipulated the outcomes of a study on the third generation of contraceptive pills, study that Organon had commissioned and funded. The research concluded that the second generation pills had fewer side effects than the new ones and that consequently there was no reason to change contraceptives, an outcome that apparently did not please the company, which had just launched the new pills. A third example concerns nominations of university professors, which may be financed by a company or by a whole industrial sector. One professor at the University of Delft no longer wished to take responsibility for the outcomes of one of his earlier studies, which had criticised the industry for its destructive effects on the environment. Asked about his position by the press, his argument was that he could no longer be too offensive towards the industry since they paid for his chair. Following the concern this raised in university circles, he had to step down and lost his chair. The last example refers to the relationship between research on biogenetics and interested industrial companies. Taking into account the need for enormous financial investments in equipment and long-term research activities required by this type of studies, contracts between the industry and research laboratories are frequent. The consequence is that the research is controlled by the industry, which considers the research material as its property so that free access to research information and databases is not automatically given to other researchers. Another consequence is that research priorities in this field are increasingly determined by the interests of the industry rather than those of the university or the general public. More serious still is that in some cases universities, in their quest for funding, pressure their researchers not to frighten off possible funding sources by stating too many research conditions, thus threatening academic liberty and independence. The danger of this development is that the aim of research will shift. From exclusively the progress of science, the general good and the achievement of a high academic reputation as it still is today, it may increasingly come to include personal gain. Of course, it should be observed that contacts between the university and industry are not intrinsically a bad thing and may be very useful, but only to the extent that the interests of both parties do not become intertwined.

6. DISCUSSION

Considering applied research in its real perspective, a first observation would be that we have to realize that even the best research is only one element in policy decision making, other just as important elements being the political will to change the law or to change existing practices, and of course the availability of financial resources. A second observation would be that with respect to research integrity one might make a distinction between research in the so-called 'life sciences', such as pharmacy or medicine where direct financial interests may endanger the researcher's integrity and thus the validity and reliability of the study outcomes, and research conducted in the social sciences, including criminology and law, where crime policy interests, including ideological orientations and politics may threaten the objectivity of the study.

Unfortunately, as far as I know there has not been any systematic research on the issue of threats to the scientific integrity of researchers. As a consequence we don't really know the extent to which these practices exist. Indeed, I have merely presented some particular examples of these threats that have raised considerable concern in the Netherlands: whether they are only the tip of the iceberg remains unknown.

However, despite the lack of convincing empirical evidence the recent multiplicity of examples, indicating the existence of at least some serious threats to scientific integrity, has alerted the universities and they have made a number of proposals to change their own current practice. It should be recognised that since the 1990s all Dutch universities have an Ethics Commission which has formulated a Code of Conduct with the objective of avoiding conflicts of interest. For example, there is a code of conduct for medical research, for research on ethics in medical practice, and for the social sciences with respect to data protection issues. In addition, since May 2003 there is a national Commission for academic integrity, which has an appeal function in cases where conflicts at the university level cannot be resolved. However, its verdict is not final and it is communicated to universities as a recommendation only (Köbben 2003). In this respect the Rector of the University of Amsterdam has observed that all existing codes specify the correct procedures to follow, whereas there is rather a need for a code specifying the normative principles which should guarantee the credibility and faith in the incorruptibility of academic research (van der Heijden 2003). In his address on the occasion of the 372nd *dies natalis* of his university he recommended a number of specific rules for academic researchers who accept to work for the market. In this case they would have to mention in every academic publication their additional functions, such as being a consultant or shareholder in a company as well as any additional sources of income they have. A different initiative was

proposed by the Rector of the University of Delft, as a follow-up to the case of a professor who withdrew his research outcomes in order not to offend the company that financed his chair. He is going to introduce an arbitration committee that will decide in cases where research outcomes are contested and research integrity is attacked. The Professor of Applied Philosophy at the University of Wageningen, Korthals (2003) wrote in a press article that the life sciences (genetics and others) should establish completely transparent contracts with funding agencies that are acceptable to the public. If they fail to do so citizens-consumers will end up losing confidence not only in political authorities but also in what may be the outcomes of scientific research. The author feels that the universities are taking great risks in allowing systematic encroachment on academic independence, or nominations of professors financed by a multinational. Moreover, he pleads that academic journals should require from contributors that they reveal who funded the research and where the study was conducted.¹ The author also argues that in cases where researchers have some financial interests in the study's outcomes, for example because they possess shares in the company funding the research, their articles should be refused by academic journals. Other academics claim that legislative revision is needed to reinforce the position of the researcher and protect his scientific integrity.

In conclusion the following more general points may be made.

First, it is absolutely crucial to take into account the long-term interests of academic research and consequently of scientific progress. In that respect it is essential to guarantee the independence of researchers in the case of pressure, be it political or financial. Second, in the case of research that is funded by third parties, transparent contracts should be signed, specifying, *inter alia*, research conditions and responsibilities, data ownership and uncensored publication of research outcomes in a reasonable period of time. Third, universities have to make it quite clear that they do not only work for the government or the market but also for the entire community, that is for the general good. Finally, universities should pay considerably more attention to questions of scientific ethics in their curriculum, so that students and future researchers are taught the norms and values they will have to respect when they enter the world of research. In this way they will be better prepared for what they may expect and may be able to resist pressure, whether they work for national or local authorities or for private industry.

¹It should be observed that this is already common practice in most American academic journals.

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