Scientific Values: How Universal?[1]

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Introduction

Throughout history there has been an intense interconnection between science and philosophy on the one hand and morale and ethics on the other. This interconnection is cognate with the interdependence of the ancient Greek concepts *episteme* - scientific knowledge - and *phronesis* - its prudent use and wise application. It is, therefore, proper for a conference on the universality of moral and ethical values to provide scope for the universality of scientific values. And as President of the European Federation of National Academies of Sciences and Humanities I feel honoured to have been invited to address this issue. As mentioned, the distinction between universalism and culturalism can be traced to Greek philosophy, and was an important issue in the Athenian philosophical debate. Plato defended the viewpoint that morals are based on the knowledge of universal ideas, and therefore have a universal character. Aristotle argued that ethical rules should always be seen in the light of the traditions and accepted opinions of the community.

In the course of history both points of view have been supported. A few centuries ago, under the influence of Kant and Locke, the universal view was prevalent. In later thinking, following the philosophy of, for instance, Hegel and Herder, the cultural view became more popular. Herder rejected the Enlightenment idea of a universal civilisation all together, and thought that each culture was in some way unique. This tendency towards the universal view has become even stronger under the influence of the current large-scale migration that is occurring both within Europe and into Europe, mainly from developing countries in Africa and Asia. Consequently, modern societies, more than ever before, have a multicultural character, which may generate conflicts and antagonisms, but which can also lead to a demand for cultural tolerance and an appreciation of diversity. Whatever the case may be, it confronts us with the controversy of the universality versus the cultural-specificity of norms and values.

There are two distinct aspects with respect to the universality of scientific values. The first refers to the scientific norms as such, and deals with one of

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the basic issues in the 'science of science', namely the question whether we can presuppose the universality of analytical and conceptual laws in science, or whether the methodological and epistemological framework of science is culture-bound and therefore not universal. The second aspect concerns the interaction between science and ethical values. The question may be raised whether science is autonomous and value-free, or whether it is subject to normative constraints and limits, and therefore not value-free. If the former is correct, the issue of the universality or culture-boundness of ethical norms is not relevant. If, however, the latter view would be adhered to, the question may be raised whether such ethical norms and constraints are universal and generally valid, or culturally determined and differing across cultures. Both questions will be addressed briefly in the following exposé.

Universality of science

Many regard the universality of scientific laws as the fundamental advantage of science and the driving force of its development. The laws of physics and chemistry or life sciences, often expressed as mathematical formulas - the scientific lingua franca - are applicable everywhere, and scientists from all over the world can participate in the scientific discourse. In fact, it is considered foolish for scientists not to take part in such discussions, since this is the only way for science to progress and for individual scientists to develop.

I would even go as far as predicting that such collaboration almost always creates a better understanding of common goals. Where there are differences in approach or methods, collaboration will lead to a greater sensitivity to and, often, a greater appreciation of such differences in approach. It can even contribute to the mitigation and prevention of conflicts between nations, notably in two ways.

In the first place by the persuasive power of scientists' belief in rationality and rational solutions as well as by their tradition of coping with conflicts by agreeing to the rules of rational decision making. These include a proper definition of the question, agreement on the methods to be used, a logical analysis of the arguments, the evaluation of the adequacy and sufficiency of the data supporting these arguments, the resolve to collect additional information, if necessary, and, then, to postpone definitive conclusions until further evidence has been acquired.

A second factor that contributes to conflict resolution or prevention is the required attitude of openness and collaboration and a need to communicate in the search for the truth. Currently, collaboration and contacts have to cross national borders more than ever before. Science cannot exist and develop in isolation. It presupposes the exchange of knowledge, expertise and results and requires a genuine attempt to understand and criticise others' work. Even during the darkest moments of the Cold War there was still scientific contact between the scientists of the Soviet block and those of the Western world. I am convinced that active dialogues between scientists of countries in conflict help to build bridges of trust between countries.

Let me repeat my remark in reaction to the recent terrorist attack in Madrid in my Presidential address at ALLEA's general assembly in Brussels,: All indications point to fanatic and fundamentalist Islamic cells being responsible. But the creation of a mistrustful atmosphere vis-à-vis scientists from Islamic countries or the exclusion of certain Islamic countries from the scientific discourse is not only ineffective but also unacceptable, as stated, for example, in the ICSU's doctrine on the universality of science. On the contrary, more contacts and more intensive collaboration with scientists from Islamic countries could help to further insights into possible philosophical and cultural differences, and could contribute to a better understanding and trust. Science and scholarship are the vehicles par excellence for building bridges between cultures.

To avoid being misunderstood let me state that this does not mean that the universalism of scientific laws also generates universalism of morality and ethical norms as the Positivistic savants envisaged, and this most certainly does not mean that progress in the development of such universal science is linked to progress in humanity. Recent history offers plenty of examples to contradict this supposition.

But does this ideal of the universality of science apply to all sciences? What about the sciences in which culturally determined institutions and culturally determined behaviour are the objects of research? Two notable cases in point are the social and behavioural sciences. It is often argued that in these sciences the object of research, which is per definition determined by culture, can never be analysed by methods and conceptual systems that are independent of the culture that causes the variance in the phenomenon being researched.

I can provide a number of examples from my own research interest: cross-cultural psychology. Cross-cultural analysis of behaviour or performance in non-Western cultures often confronts the researcher with the restrictions of

the theories and instruments developed in the West. There are phenomena for which no real expressions are available outside the culture concerned; for example the Japanese *ringi-sei* mode of decision making, Latin American machismo, or the Dutch phenomenon of the *poldermodel*. In some cultures, relationships that are considered to be generally valid are not found, such as the relationship between participation and the effectiveness of decision-making, or the connection between financial incentives and work performance. It is furthermore obvious that the saliency of certain research topics is culturally determined: cultural diversity is particularly important in immigration countries, dyslexia is more relevant in literate cultures, and the issue of national versus supra-national identity more relevant in countries within the European Union. The researcher also discovers that the practicability of certain research instruments is culture-bound: paper and pencil tests cannot be used in primitive cultures, nor speeded tests in cultures where precision is more important than quantity, questionnaires in cultures where there is pressure to give socially desirable or politically correct answers, or interviews in 'face saving' cultures.

The question is, then, whether we have to understand cultural specificity against the background of *universal* and *generic* theories and methods (which is called the *etic* approach), or whether this behaviour can only be understood within its cultural context, and therefore requires *culturally specific* theories and concepts (which is called the *emic* view). In keeping with this latter view, a demand for indigenous psychologies has emerged: an African, Chinese, Indian etc. psychology besides the Western or Eur-american psychology. The examples of culturally specific topics and research instruments mentioned above encouraged some cross-cultural psychologists to support the latter approach. Many theories and methods thus seem to be susceptible to cultural differences and to demand a cultural contextualisation.

But introducing the cultural context for a real understanding of the behaviour is not paramount to a drastic 'indigenisation' and differentiation of psychology. The need for differentiated and separate conceptual frameworks and theories for specific cultures leads to serious epistemological problems. Why, for instance, should this requirement apply only to large, well-defined cultures, and not to very specific and unique subcultures as well? Why to America versus Asia, and not to Northern versus Southern Italy or Norway, city versus countryside, men versus women, the high versus the low social economic class etc. etc.? In other words, strictly speaking the demand for continuous 'indigenisation' leads to an infinite fragmentation of psychology,

and ultimately to solipsism, where nothing but silence remains. Eventually the cultural specificity can only be understood against the background of communality and the universality of theories and methods, and not vice versa. Insights that have been acquired through subjective and culturally contextualised methods always have to be verified or falsified with methods independent of the subjectivity of the observer and researcher in order to achieve a scientific character. Science requires objectivity and independence.

Autonomous or value-bound

As explained in the introduction, the second issue we want to discuss in this paper refers to the interaction between science and ethical norms. The first and basic question in this connection is whether science is value-free or value-bound. In the tradition of the positivistic/rationalistic demand for autonomy and freedom of science, many scientists have defended the former position. Their argument is that scientific knowledge as such does not have a moral or ethical connotation. Science tells us how the world is, and not how it should be. Science is driven by the curious search for the truth and not primarily by the hope to improve the destiny of humankind. Ethical and moral problems only arise when science is applied and produces usable objects or services. These can be used for better or for worse, but the scientific products as such (insights, ideas, knowledge) are neutral and a-moral.

Of course, the freedom to formulate and adhere to its own laws and criteria is a *sine qua non* for science. The pressure of powerful institutions or persons, economic and financial interests or an excessive craving for personal honour and fame can seriously corrupt scientific results, as tragic examples have shown throughout history. Without this freedom science will sooner or later become irrelevant and useless. But this is not paramount to saying that ethical values and norms do not have a legitimate place in scientific endeavour (see also Drenth, Fenstad & Schiereck, 1999). Arguments for such an imperative interdependence have been raised - arguments that are not easily refuted. Let us list these arguments and thereafter draw a conclusion from this section.

- All scientists and scholars should reflect on the paradigmatic presumptions and the socio-historical entrenchment of their scientific endeavour. Science is based upon the (non-scientific) assumption that there is order in the

universe whose principles can be understood by human ratiocination. Our conceptualisations and models are always abstractions of reality, and we can only achieve approximations - or 'reconstructions'- of this reality. Science abstracts and reduces reality in order to get a hold on it, but that implies that there are more kinds of knowing than scientific cognition. The 'knowledge' of a loving mother when regarding her child is different from that of a cognitive psychologist, but not less realistic or less discerning. In other words, the nature of scientific knowledge is limited and does not domineer over all human knowing. These reflections and basic assumptions are in themselves not scientific by nature, but metascientific and value-embedded.

- Another metascientific question ensues from the choice of subjects to be researched or, rather, from those to be ignored. Is that which the scientist and scholar pursue, worth knowing? The choice of scientific issues to be addressed has to be justified, not only for the scientist and scholar personally, but more often also publicly, since taxpayers or a sponsor's money is involved. In essence, this justification implies non-scientific and value-bound decisions.
- These days it is generally accepted that in their research and production of knowledge, scientists deal with a social reality that is fundamentally affected by these findings and this knowledge. A variety of social objectives of great value, including health, safety, peace, a sustainable environment, communication, mobility, privacy, and economic development, are radically influenced by modern science. Many ethical or socio-political problems and differences in opinion result directly from scientific research's advances. This insight and the anticipation of the changes that are effected form a necessary, but essentially non-scientific obligation for scientists.
- The argument that value-free autonomy has to be reserved for science and value-bound dependence for applied science and technology, loses its strength in view of the increasingly blurred borderline between basic and applied science. There is a good deal of overlap between the two spheres and it becomes more and more difficult to identify a part of science that does not affect or is not affected by technology. But even if scientists refrain from actually suggesting the ethical choices to be made and restrict themselves to the presentation of the probabilities and risks associated with certain options, this is not value-free. Risks involve normative choices, as is illustrated by modern medical or environmental research, and scientists have to face these choices. There are further value-bound questions such

as: risks for whom? How far does the right to know go? What is the proper balance between self- determination and certain groups' interests vis-à-vis the society as a whole? How certain does a scientist have to be before issuing a warning, especially where irreversible developments (*e.g.*, regarding global change) are concerned?

- Finally the research process itself is subject to social and ethical norms. Scientists have to ask themselves what effects the research has on the object being researched, regardless of whether this is a human being, an animal, the natural environment, a social system or a cultural artefact. Informed consent in medical research, protection against the invasion of privacy in psychological research, genuine care for animals in biological research, avoiding the instigation of unrest or the giving of unjustified hope in social research, preservation of historical integrity in archaeological excavations, are all cases in point.

Given the power of these arguments, our conclusion must be that scientific and scholarly research is embedded in the context of values, interests and political motives. Rather than denying this, or retreating to the safety of the ivory tower, scientists and scholars would do well to acknowledge this and take the associated responsibilities seriously.

Ethical constraints

As we have seen in the foregoing section, science cannot be regarded as an absolutely free and autonomous enterprise; it is bound by socio-ethical values and its freedom is restricted and cannot be defended at all costs.

An interesting question is whether such ethical inhibitions have to lead to 'no-go' (wholly unacceptable) or perhaps 'slow-go' decisions with respect to certain areas or subjects of research. 'Slow go', for instance, would apply if research, or the analysis or interpretation of the results should be temporarily suspended until the ethical implications have been subjected to public discussion, and some consensus has, preferably, been reached.

Examples of both types of constraints are easy to find. There is little disagreement on the unacceptability of attempts to make human-ape hybrids, the application of germ line genetic manipulations to enhance musicality or intelligence, or human cloning for procreation. These subjects would fall under the 'no go' regime, at least at present. Furthermore, not all the consequences of modern medical and gen techniques, as far as diagnostics as

well as therapy are concerned, have been fully realised, and some of them need thorough reflection and discussion before they can be applied easily and without remorse. A recent report of the Science and Ethics Advisory Committee of the Royal Netherlands' Academy of Sciences has, for example, started such a discussion on the pressing question of prenatal testing (Galjaard & Noor, 2004). For some of these topics a 'slow go' adage may very well prevail.

At this point it is important to realise that any discussion of constraints to be imposed on research is fraught with danger. History abounds with examples of science being silenced or repressed because its research results were not consonant with the ruling ideologies, or because they did not favour the interests of the political or economic authorities in power, or were opposed to the interests of movements or action groups. Even if such movements have reputable objectives, such as peace and détente, equal rights for women, and protection of the environment, infringement of the right to investigate and bring to light the results of this investigation on the basis of the political unacceptability of certain outcomes to external groups, is highly precarious.

We would further like to assert that it would be a mistake to refrain from doing research into a given subject or problem because it might possibly be misused or applied irresponsibly. That would virtually mean the end of all research since no scientific result is secured against wilful abuse. Moreover, outcomes of fundamental and innovative research are often surprising and hard to predict, and this makes it difficult to constrain research on the grounds of potentially undesirable or dangerous outcomes.

Nevertheless, it is an undeniable fact that in almost all societies scientific research is pegged down by social, political or legal restrictions, which are based on ethical or moral values. With reference to the theme of the present conference, the question arises whether these constraints are universal or culture-specific. It is obvious that many legal, social and ethical confinements are definitely culture-bound. This is why we find such large differences in ethical constrainments between countries. Social and ethical norms are rooted in religion and cultural traditions and are (as a consequence) converted into political or legal regulations. And it should be clear that these vary considerably between countries.

In fact, if only scientific arguments and rational risk analysis prevailed, there would be far less disagreement between countries than found at present. There is no scientific evidence whatsoever that the currently approved genetically modified foods pose a threat to public health or the

environment. Moreover, advances in plant genomics research have opened a new era in plant breeding, which is fundamental to European needs to enhance agricultural productivity and sustainability to ensure food security, health, environmental safety, and novel crops, as a recent EASAC report states (EASAC, 2004). Still, many European countries resist GM foods, or try to scare off consumers by placing ominous warning labels on these products. Research on stem cells is another case in point. The regenerative power of stem cells isolated from embryos cultivated in vitro has opened a whole new perspective on the medical therapy of genetically determined human diseases like diabetes, Parkinson, Alzheimer and various forms of cancer. Nevertheless, national debates on the acceptability of this kind of research have led to quite diverging viewpoints and legislation in the Western world, with the religiously conservative countries like the USA, Ireland and Italy (together with Germany, but that may be caused by the 'Mengele-syndrome', originating from the Second World War) as the strongest opponents, and countries like Great Britain, The Netherlands and the Scandinavian regions as the strongest proponents. A recent special report in the Newsweek of April 5, 2004 ('the God effect') presents an instructive overview and analysis of people's resistances against the advancements of science on religious, spiritual or cultural grounds. In any case, it is plain that different views, based on religious or traditional values, may lead to quite different positions with respect to the acceptability of certain scientific studies and can lead to varying normative, political and legislative restrictions to scientific research.

But is there also universality in this respect? Are there ethical constraints to scientific research that affect such peremptory values of mankind that they would be incontestable for all scientists and scholars, and therefore would have a universal character? Which ethical constraints would be so fundamental that they could have such a universally imperative character? As in respect of the universality of human rights, it is not easy to formulate such incontestable ethical constraints to science, but maybe we can agree on the following principles (see also Drenth, 1999):

1. Research is not justifiable if, before, during, or after an experiment or the gathering of empirical data, unacceptable damage is inflicted upon the object of the research (whether this concerns people, animals, nature or culture), or upon its wider social or physical environment (unrest, pollution).
2. Research is not justifiable in cases where the nature and/or consequences of the research are in conflict with basic human values that include respect

for human dignity, the guaranteeing of autonomy and freedom of choice for all individuals, informed consent prior to participation in research, and the rejection of every intent to commercialise the human body.
3. Research is not justifiable if it contravenes solidarity, firstly with mankind, thus not guaranteeing the treatment of fellow human beings on the basis of equality, secondly with posterity, thus not embodying the broader responsibility for the sustainable development of the planet that has to be left for future generations.

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