

## **Ethics in science: should it be part of the core curriculum?**

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It is likely that the reason why the absence of ethics from a science degree course is not missed lies in the belief that good science has got to be performed in a completely objective and disinterested manner so that having any kind of predisposition to a set of ethical or moral values might actually be prejudicial to the scientific process itself. According to this point of view, the mind has to be untrammelled by any considerations other than those involved in the investigation of the phenomena being examined. Indeed, some might even argue, that since ethics deals with essentially human interests, ethical considerations are irrelevant to science which argument would then lead to the absurd conclusion that good science can only be performed by androids or robots since scientists cannot possibly leave their human dimension outside the laboratory door.

Naturally, good science does require objectivity on the part of the scientist and this in turn requires all actions to be performed with total honesty, integrity and a commitment to truth above everything else, thus showing that certain basic ethical values are actually inherent to and form an integral part of the very essence of the scientific method. Moreover, since scientific findings generally need to be replicated if they are to become part of the corpus of established science, then the need to work honestly is incumbent on the experimenter if s/he is to survive the onslaught of peer review so that possibly even an amoral person who would not mind applying dishonest means to reach ends in other spheres of activity would still be forced to work honestly in his laboratory. Whether or not this Dr Jekyll and Mr Hyde type of personality can be sufficiently versatile to work in two opposed modes depending on circumstances is another matter; although historians of science do tell about charlatan-scientists who made fortunes peddling alchemical lore while hobnobbing with royalty and at the same time were capable of making important contributions to truly "honest" science.<sup>1</sup>

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<sup>1</sup> P. Strathern, writing in "Mendeleyev's Dream: the quest for the elements" (Penguin, 2000) describes Paracelsus (1493-1541) as a remarkable exemplar.

Since the results and the products of science are not confined to laboratories but extend outwards towards society and its manifold needs, then clearly, this interface between science and society has to have an ethical dimension as is true of all societal interactions. In the past, popular enthusiasm for science has been generally good; however, more recently, science suffers from a serious image problem and people no longer take for granted the view that it is a benign activity from which everybody stands to gain. This erosion of optimism in the scientific enterprise is not occasioned by people's lack of confidence in the ability of scientists to do their laboratory work well but rather it is a result of a decline in the trust of scientists who are seen as espousing ethically dubious and irresponsible attitudes. The old trust is being replaced by suspicion and fear of abuses of various kinds. The creation of chemicals of mass destruction, the deliberate release into the environment of poisonous substances designed to increase material gain, the spectre of genetically engineered Frankenstein monsters and similar stories feed the public mind with dread and mistrust of modern science. The Code of Ethics for Scientists originating from the Pugwash Conference of 1984 was established precisely in response to a concern by the general public about the applications and consequences of scientific research.

Even if a reality ever existed wherein science was practiced as a socially secluded quest for 'objective knowledge', this is certainly not the picture today where project-oriented scientific teamwork is promoted through such initiatives as the European Framework Programmes. In such a scenario, any financially-supported scientific actions need to justify themselves in terms of potential human benefits. On the one hand, such a development is bound to inculcate in science an explicit ethical and social dimension since, in exchange for public funds, science will reasonably be expected to produce visible returns to society. On the other hand, there is a risk that only that science which has a good public image or which is identified by the political class as deserving of priority treatment can survive because it receives appropriate funding levels: laboratories toiling on problems that are less visible, if equally or possibly more important, might be driven out of work for lack of support.

Be that as it may, it is unlikely that the situation will change away from this model in the near future and arguably such an approach to scientific support is not unreasonable on a number of counts. But the point is that

given this situation there is added reason why scientists in training should, in addition to studying the nature of things, be exposed to principles that dictate the nature of man. They need to be trained to think conscientiously, to own up to their responsibilities towards society and to the profession itself. They also need to know how to deal with the important interface between science and political power. It was unfortunate that the founding members of the Royal Society felt that this first scientific think tank launched in Oxford in 1663 should work to improve “knowledge of natural things, and all useful Arts, Manufactures, Mechanick practices, Engynes, and Inventions by Experiments” but should not meddle “with Divinity, Metaphysics, Moralls, Politicks, Grammar, Rhetorick, or Logick”. Maybe this resolve by the Society to insulate science from power (and religion) might have been expedient at the time in view of the rather turbulent political climate in England (Charles I had lost his head a few years before and most members of the nascent Society were royalists!) but it is certainly not realistic today to expect scientists not to interact with politics and power especially when social progress can be so dependent on scientific progress. It is thus important that scientists are trained to have an effective and prudent interface with the political class and moreover, because scientists are empowered by their special training and knowledge, they should also realize that their ethical behaviour probably carries even greater responsibility.

In any university, the introduction of ethics into the core science programme will no doubt have to contend with the problem of finding appropriate academic space in the teaching curriculum; there will be resistance from those who view the subject as an “enrichment course” rather than as part of science education proper and these would want to relegate it to the corner of the optional studies. At the University of Malta, ethics in science is taught in a rather patchy manner and it is not a requirement for all science students. The computer science and informatics departments run special classes dealing with certain aspects of unethical behaviour mainly as it relates to plagiarism by students, a problem which has recently been exacerbated by the Internet. In my view, however, we still lack a robust programme that is a common requirement for all science students which would encompass the various aspects of ethics and ethical behaviour peculiar to science. Such a programme might for example include discussion of mechanisms for ethical decision-taking, conflicts of interest and data ownership, authorship, publication and disclosure rights and obligations, peer-review,

mentor-student and employer-employee relationships and means for rectifying unethical practices.

It has to be mentioned that the formal teaching of scientific professional ethics at university is not accepted by all and among those that favour such instruction, some would prefer that it takes one form while others would argue for different forms of learning. Indeed, there are even some strongly held views against the institution of special codes of ethics for scientists or for any other professionals.<sup>2</sup>

Opinion on this matter is not yet tested locally and the level of sympathy to the introduction of such studies at the Faculty of Science in particular has yet to be established. One would hope that the debate starts in earnest so that a reasoned decision can be reached which would inform future faculty policy on this matter.

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<sup>2</sup> For example, see J. Ladd "The quest for a Code of Professional Ethics: An intellectual and moral confusion". In *Ethical Issues in Engineering*. Ed. Deborah G. Johnson. Englewood Cliffs, NJ: Prentice-Hall, 1991, pp. 130-136.