



COMETS
CNRS Ethics Committee

OPINION n°2006-15

« THE ETHICAL ISSUES OF NANOSCIENCE AND NANOTECHNOLOGY »

Approved at plenary session of 12 october 2006



SUMMARY

The surge in the exploration and manipulation of matter on an atomic scale is seen by many as a revolution with exciting, but sometimes disturbing, prospects. COMETS, the CNRS Ethics Committee, wished to take up this subject and herein formulates an Opinion, proposing avenues of reflection and recommendations to both the institution and its researchers.

This Opinion, which essentially aims to raise awareness in the research community of the ethical dimensions of nanoscience and nanotechnology research, does not seek to describe this field of science and technology, as the joint report of the French Academies of Sciences and Technologies (2004) has done¹.

Nor does it have the scope of the work published that same year by the UK's Royal Society and the Royal Academy of Engineering², which deals in depth with the ethical and social aspects of this field.

This Opinion also leaves aside many aspects analysed elsewhere: impacts on health, currently being examined by France's National Consultative Ethics Committee for Health and Life Sciences (CCNE), impacts on geopolitical equilibrium, addressed by the UNESCO Report³, as well as problems of a legal nature, which are a matter for the law.

Taking into account the dynamism of this research sector and its prospects for application, this Opinion would like to foster awareness among the researchers concerned, both in their activities within the CNRS and towards the public, so that the freedom of research — that is so fundamental to creativity — is accompanied by a strong sense of individual and social responsibility.

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I. Why is a formal internal request considered necessary? This formal internal request is justified by the promises and concerns raised by nanotechnology and nanoscience, and by the fact that the CNRS cannot ignore the deliberations carried out upstream on their ethical implications.

II. The nature of nanoscience and nanotechnology. An analysis of nanoscience and nanotechnology reveals first of all the tension between the two seemingly contradictory aspirations that underlie them: the desire for control and the desire for emergence. Secondly, it reveals the aura of fiction surrounding them, which must be taken seriously; and thirdly, the need for ethical and social vigilance in response to the “nano” approach, which is a truly generic technology that will affect all production sectors.

III. The specific features of nanoscience and nanotechnology. Admittedly, “nano” is a convenient slogan, but three new features should be considered: the first one is the scientific context, with the nano-bio-info-cognitive (NBIC) convergence. The second one is the political context of globalisation and competition; and the third is the social context, with its demanding public.

¹ ACADEMIE DES SCIENCES ET ACADEMIE DES TECHNOLOGIES, NANOSCIENCES, NANOTECHNOLOGIES, PARIS, EDITIONS TEC&DOC, RAPPORT SCIENCE & TECHNOLOGIE N°18 - AVRIL 2004.

² NANOSCIENCE, NANOTECHNOLOGY: OPPORTUNITIES AND UNCERTAINTIES, 2004, [HTTP://WWW.NANOTEC.ORG.UK/](http://www.nanotec.org.uk/).

³ NANOTECHNOLOGY AND ETHICS, 2006, [WWW.UNESCO.ORG/SHS/EST](http://www.unesco.org/shs/est)

IV. An overview of the somewhat contrasting ethical and social support initiatives developed in other European countries: *Constructive Technology Assessment* (Netherlands); *Public Engagement in Science* (Great Britain); *Pour une symbiose entre science et culture* [For a symbiotic relationship between science and culture] (Germany and France).

V. For an ethical code of conduct applied to nanoscience, based on good practices, risk prevention and precaution in the face of uncertainty, and deliberations on values and purposes.

