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## **THE INTERDISCIPLINARY APPROACH TO EMERGING TECHNOLOGIES: AN ITALIAN ACADEMIC INITIATIVE**

*Giorgia Guerra\**

### **Abstract**

The development of a consensus that ethical, legal and social issues are of the utmost importance in the governance of emerging technologies prompted the University of Padua to launch a new academic research initiative to seize the opportunities and promises of emerging nanotechnologies. It has established the Centre for Environmental Law Decisions and Corporate Ethical Certification (CIGA),<sup>1</sup> in the Italian town of Rovigo, in the Veneto Region, with the aim of giving proper attention to their ethical and social sustainability.

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\* Research fellow at the Center for Environmental Law Decisions and Corporate Ethical Certification (CIGA), University of Padova (Italy)..

<sup>1</sup> See [www.ciga.unipd.it](http://www.ciga.unipd.it) (accessed 30 November 2010).

## 1. About CIGA: a brief outlook

The CIGA Centre is promoted by the Departments of Philosophy and of Comparative Law of Padua University, thanks to funding provided by Fondazione Cassa di Risparmio di Padova e Rovigo, a charitable local bank Foundation. The research programme of the Centre is integrated with the activities of the Italian Research Cluster on Nanotechnology, which is located in the Veneto Region, and it collaborates especially closely with the European Center for the Sustainable Impact of Nanotechnologies (ECSIN), which is also based in Rovigo and whose mission is to assess the toxicological and ecotoxicological impacts of nanoparticles.<sup>2</sup>

The Centre states as its mission the performance of research on the ethical and social impact of nanotechnologies. It encourages cross-disciplinary dialogue on these issues as a means of contributing to the broad public debate on new and emerging technologies.

## 2. Research

The Centre examines the three dimensions of ethics, law, and society. It has started, for instance, an analysis of the media coverage of nanotechnologies, and their convergence, in Italy. CIGA has also explored, with the help of distinguished international scholars, the issue of international inequality and nanotechnology development.

Looking at research activities in law, the Centre has adopted perspectives on comparative private law, biolaw and human rights to facilitate a multidimensional analysis of the impact of nanotechnology, particularly on human health and environmental protection. The ethical debate on emerging technologies has mainly ignored, until now, the discourse on human rights. Indeed, human rights language could bring a legal perspective to most of the ethical debate.

Among the legal research activities related to nanoscale technologies, two important projects have been implemented in association with the Department of Comparative Law of the University of Padua:

1) "*Regulatory aspects of nanomedicine*", funded by the University of Padua as one of its strategic research projects, attempts to assess the impact of the ethical challenges of nanomedicine in legal systems. In particular, human dignity, the protection of human health and the environment, and the principles of distributive justice are addressed from different legal perspectives, i.e. civil law, labour law, environmental law, constitutional and international law, legal theory and legal philosophy.

2.) *Ethical and regulatory challenges raised by synthetic biology -SYNTH-ETHICS*,<sup>3</sup> is funded by the EU 7<sup>th</sup> Framework Programme. It aims to address the ethical, legal and social implications of synthetic biology, with a special focus on biosafety and biosecurity and on notions of life. In this project CIGA is working on the reconstruction of the existing regulatory frameworks in synthetic biology and closely

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<sup>2</sup> See [www.ecsin.eu](http://www.ecsin.eu) (accessed 30 November 2010).

<sup>3</sup> See <http://synthethics.eu/> (accessed 30 November 2010).

related fields like nanobiotechnology and genetic engineering, and on an assessment of their ability to deal adequately with existing and newly emerging ethical issues in synthetic biology.

Research results from CIGA projects have been published in national and international journals such as the International Journal of Nanotechnology, Nanoethics, Studies in Ethics, Law, and Technology.

### 3. Networking and outreach activities

Research activities are complemented by other initiatives for networking and outreach. These aim to foster the circulation of ideas between the Centre and the national and international research community, and to transfer knowledge and competences to the local Rovigo community and communities within the Veneto Region.

As the preferred vehicle for these networking and outreach activities, CIGA promotes or co-organises workshops, exhibitions, and introductory training on the implications of nanotechnology for society. These activities are carried out in close collaboration with the European Centre for the Sustainable Impact of Nanotechnologies (ECSIN).

A few past projects are:

- 1) International workshop: *Managing the uncertainty of nanotechnology. Challenges to ethics, law, and policy-making* (Rovigo, Italy, May 22-23 2008), which focused on the impact of nanotechnological innovation on social institutions, values, regulatory frameworks and processes of political decision-making;
- 2) Exhibition: *Nanologie. Prospettive dall'infinitamente piccolo* [Nanologies. Perspectives from the infinitely small] (Rovigo, Italy, April 20 – May 29 2009), a science communication project dedicated to the secondary schools in the Veneto Region to disseminate the knowledge of the societal impacts and challenges of nanotechnologies;
- 3) National workshop: *Nanotechnology, rules, and responsibility. Experiences and questions from the places of innovation* (Rovigo, Italy, December 1-2 2009), dedicated to the Italian research community. The objective was to explore themes and opportunities for research collaboration on nanotechnology regulation.
- 4) International workshop: *Normative pluralism & Nanotechnologies. Internormativity and nanotechnology regulation* (Rovigo, Italy, 3-4 June 2010), which addressed the interplay of different normative dimensions (social, technical, legal) in nanotechnology regulation and its impact on the evolution of this research field.
- 5) Science communication and training project *Tekne. Conoscere e far conoscere le nanotecnologie*<sup>4</sup> [Tekne. Understanding and communicating nanotechnologies]. This was dedicated to secondary school students who wish to gain a better understanding of nanotechnologies and their potential.

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<sup>4</sup> See [www.nanotecnologie-tv.com](http://www.nanotecnologie-tv.com) (accessed 30 November 2010).

### **3. Future prospects: questioning responsibility?**

The CIGA programme for 2010-2012 addresses the issue of responsibility in nanotechnology development. Acknowledging agreement among policy makers, researchers, firms and civil society organisations on the importance of responsible nanotechnology development, a multi-annual and multi-disciplinary research programme is aimed at ‘unpacking’ the notion of ‘responsibility’ to examine its heterogeneous meanings, applications, and contexts in nanotechnology discourse and research practice.

A targeted research effort will examine the notion of responsibility with the goal of clarifying the concept in order to inform research and policy making. Three broad aspects of responsibility in nanotechnology will be explored:

- the dimensions of responsibility, e.g. legal, social and moral, and their interplay;
- the enactors of responsible governance of nanotechnology, along and across these dimensions, e.g. scientists, firms, NGOs;
- the sites and mechanisms through which this ‘responsible action’ is undertaken, e.g. public engagement mechanisms, national and international legal systems.