



Nanotechnologies are presented as having the potential to change the society and to redress imbalances at the global scale, because nanomaterials and processes could be applied to virtually any manufactured good across every industrial sector. The implications of nanotechnologies on the global scale are very controversial and there is a general discussion regarding the goals of the promised nanotechnological development.



Among various goals of these technologies, some are hoped to meet the greatest challenges of our century, such as to enhance food and agricultural production for the growing population, to produce cheap and sustainable sources of energy, to ameliorate water treatment and supply, and to provide cures for some diseases such as malaria. Salamanca-Buentello and others (2004) have identified 10 applications of nanotechnology which can support the UN Millennium Development Goals: 1) energy storage, production and conversion; 2) agricultural productivity enhancement; 3) water treatment and remediation; 4) disease diagnosis and screening; 5) drug delivery; 6) food processing and storage; 7) air pollution; 8) construction; 9) health monitoring; 10) vector and pest detection and control.



Other authors see nanotechnologies as having the potential to heighten inequalities and to disadvantage developing countries. The expected benefits for developing countries are strictly connected with the more general goals toward which nanotechnologies are oriented. Even if currently many developing countries have launched nanotechnology initiatives, the goals of nanotech production are mostly defined by developed countries that hold the technological know-how to develop them. The important challenge is therefore to orient the development toward the provision

of equal and undiscriminatory access to technological knowledge and products. Another important issue regards the potential disruption of international trade of raw materials with negative consequences for developing countries whose economies rely on raw materials' mining (cf. Schummer 2007).

Questions of justice are obviously not only linked to problems of international distribution, but affect the difference between rich and poor also inside local economies. One central issue related to this problem is connected with intellectual property rights and the forms of monopolies created through patents.* Although the number of patents is considered as an indicator of the economic development also in the case of nanotechnologies, (cf. Regalado 2004), the opportunity of the extension of the regime of intellectual property rights to the enabling nanotechnologies is very controversial even among economists themselves. Thus it is controversial, for example, whether patents are the best way to promote innovation and competitiveness, since nanotechnologies are yet in a basic and initial phase where the knowledge of basic properties of nanomaterials is of fundamental importance to develop further products. In terms of a fair distribution of resources, the creation of monopolies is problematic not only for developing countries. being Since they are located at the periphery of R&D networks, it is obviously very difficult for these countries to obtain exclusive licenses from universities from developed countries, and to participate to the patent portfolios of the global companies that have created monopolies and cross-licensing networks (see Schummer 2007). The creation of monopolies can become a source of inequalities in particular when it touches fundamental sectors like food, agriculture and medicine (ETC Group

☞ 2005). Moreover, since some expect the cost of nanoscale production to grow exponentially, this may lead to increased concentrations of production – intensified by patents – and thus of power (cf. Foladori and Invernizzi 2005).

The controversy on the possible contribution of nano to the question of distribution is not a novelty of these technologies, but it is already present in the literature regarding the impacts of biotechnologies and information technologies on a fair distribution and in general their relationship with issues of globalization. Information technologies were the area, after all, in which the concept of a “digital divide” was formulated. Divergent opinions on the relationship between nanotechnologies and justice are not only a matter of pessimistic against optimistic attitudes, and they are not just the results of different calculations, but they reveal diverse approa-

ches to respond to this question. Whereas some authors consider technologies per se as means of development, other authors highlight the central role of the conditions under which these technologies are designed and produced in order to assess their potential.



ARIANNA FERRARI

* Since 2000, all existing and aspiring member countries of the World Trade Organization (WTO) have to sign the Trade Related Intellectual Property Rights agreement (TRIPs), which extends the intellectual property rights of developed countries to developing countries as a measure to prevent “product piracy”.

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