

Nano-Divide: a Question of Justice?

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Caution: a realistic stance

Nanotechnologies will not be a cure-all.

Nevertheless, they may contribute to achieving some of the eight Millennium Development Goals of the United Nations, especially:

- (i) eradicating extreme poverty and hunger;
- (iv) reducing child mortality (by two-thirds);
- (v) improving maternal health;
- (vi) combating HIV/AIDS, malaria and other diseases;
- (vii) ensuring environmental sustainability.*

*Salamanca-Buentello, Persad, Court, Martin, Daar, Singer („Nanotechnology and the Developing World“, in: PLoS Medicine 2005);
Singer, Salamanca-Buentello, Daar („Harnessing Nanotechnology to Improve Global Equity“, in: Issues in Science and Technology online, 2005).

Caution: There are many ways to achieve an objective

Nanotechnologies may help reduce malaria (early detection by nano-enabled biosensors; nano-vaccines for malaria).

However: In the Henan Province of China, malaria was reduced by 99% between 1965 and 1990 – without nanotechnology.

The Nano-Divide: The empirical thesis

As nanoinnovation becomes more and more pervasive, developing nations will be left behind, creating an even bigger chasm between the „haves“ (in the North) and the „have-nots (in the South)“.

The Nano-Divide: The ethical question

Would the (extremely) unequal distribution of and access to nanotechnological knowledge and products between developed and developing countries – as well as between developing countries and countries in transition – be unfair or unjust?

The answer

It depends!

Distributive justice and equality

Distributive justice does not necessarily require equality. There are many cases where an equal distribution would be unjust (f.ex. Nobel prize, gold medals)

The sheer fact of an unequal distribution does not make that distribution unjust.

An unequal distribution (access) is unjust if it is based on arbitrary or inadequate criteria.

Justice and the diffusion of nanotechnology

Even if regarding nanotechnological R & D the developing countries should lag behind the developed countries, this would not be unjust as such.

It is no requirement of justice that access to nanotechnological knowledge and products be as broad as possible.

Justice as equality

Every human being has the same right, i.e. the same justified claim to have his or her basic needs (food/water, shelter, clothing, sanitation, minimal healthcare,...) fulfilled.

- In this case justice requires strict equality.
- This fundamental right implies a corresponding moral duty to see to it that this equality is brought about.
- With regard to non-basic human needs there is no such right.

What does that mean with regard to nanotechnology?

1. Nanobased water filtration systems.
Clean drinking water is a basic need.
If nanobased water filtration systems can help meet this need they must be provided to those who need them. Inaccessability due to inaffordability would be unjust.
2. Sunscreens containing nanoscale titanium dioxide for better UV-protection.
Sunscreens are no basic need.
There is no duty to provide them to those who cannot afford them.

Patent system as an impediment?

“The danger created by excessive patenting in nanotechnology is that of the ‘patent thicket’ (...). Patents on basic nanoparticles and processes using nanoparticles could end up being so finely and acutely propertized that the ability to create a novel material [such as a water filtration system] could face nearly un navigable complexity in terms of competing and overlapping patent claims” (UNESCO (2006), *The Ethics and Politics of Nanotechnology*, p.18).

Two possible negative effects on developing nations

1. Nanotechnological research in developing countries may not be able to compete with research in developed countries. As a consequence these countries could not develop (and manufacture) products such as nano-based water filtration systems that are needed in order to meet the basic needs of their population. They depend on those who do have the means to develop (and manufacture) products of this kind.
2. These products, however, may be too expensive for the poor, not least because of royalties due to patents.

If a nano-divide of this kind should occur it would be unjust and therefore morally unacceptable.

What to do?

There are several options:

1. Open access to publicly and privately funded research results
2. Adaptation of the international patent system
3. Targeted investments
4. Pro-poor business

Open Access

„Encourage – and among national governments require – open access to publicly funded research results and materials“ (UNESCO 2006).

This recommendation is morally justified. Public sector patents (by universities) and the restrictive licensing that goes with it „lock up knowledge, tools, and products, thereby limiting access to developing country researchers or those who would like to conduct research to benefit the poor“.*

However, open access to publicly funded research results and materials may not suffice to avoid situations in which nano-enhanced products that could help the needy are not affordable to them.

*Meridian Institute, Nanotechnology and the Poor: Opportunities and Risks, 2005, p.15

Open Access (1)

Open access to privately funded research results as well, analogously to the „Free and Open Source Software“ that led to the development of the computer system Gnu/Linux (the code of this software is freely accessible).

This recommendation is morally justified insofar as this kind of open access may facilitate the productive adoption of a new technology especially by developing countries.

However, open access to privately funded research results should remain voluntary. As a general approach it would be incompatible with the patent system. There are good moral reasons to defend the existence of (reasonable) patents.

Compulsory licensing and parallel imports

Flexibilisation of the international patent system: compulsory licensing and parallel imports (according to the Doha declaration on the TRIPS agreement).

This modification is morally justified. In certain situations – situations concerning basic needs – there can be a moral obligation to restrict the patent system. This may mean, for instance, that the patent holder must make his products available royalty-free.

Targeted investments

Developing countries/countries in transition invest in R&D of nanotechnologies whose products may help meet the basic needs of their population, such as water filtration technology or solar cell technology. The developed countries support them (financially) in this endeavour (promotion of North-South cooperation).

This is a moral responsibility of governments in the respective countries.

Pro-poor business

„Pro-poor business“ (sustainable livelihoods business): Doing business with the poor in ways that benefit the poor and benefit the company.

If this works it would be great. However, it is not a moral, but rather a prudential requirement.