

Moral Audit, Nanotechnology and Basic Human Needs
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I have been asked to provide a moral audit of nanotechnologies in the context of globalisation in the space of 20 minutes. This may seem like a long time on the scale of the technology itself but to me it seems like nanoslot for the task at hand. Anyway, here we go.

First we obviously need to define our terms. What is a moral audit? Generally speaking, audits are measures of the degree to which particular interventions succeed in meeting the specific goals they are designed to achieve within a particular population. For example in a medical context, an audit of infection control measures might be undertaken in a hospital emergency room to assess the extent to which they conformed to an agreed protocol for how infection should be prevented.

An audit which is specifically moral is similar. However, the goals on the basis of which the evaluation takes place have a moral as well as an empirical character. For example, again in the context of the medical emergency room, we might want to know whether the delivery of treatment respected the basic moral principles of informed consent and confidentiality. We might also want to know whether or not the medical treatments available were being distributed equitably – assuming that we agreed on what ‘equity’ meant in this context.

In the framework of moral audit, there are two aspects of success or failure that are of importance. The first concerns the degree to which the activities in question cause arbitrary and unnecessary harm to the individuals involved, either as consumers or producers. The second concerns the degree to which the intervention or process being audited respects some accepted conception of human rights. Using these criteria, how might we make a preliminary moral audit of research and development in the field of nanotechnologies?

Let's begin with the first criterion of moral success or failure: the potential of nanotechnology to inflict harm. This is clearly a central issue but it requires precise definition of what we mean by 'harm'. I want to argue that this term should be applied to anything that prevents humans from successful social participation within their own community. Any disability or incapacity in relation to social participation is clearly harmful. This is because – libertarian fantasies aside - we all learn who we are and what we are capable of through cognitive, physical and emotional interaction with others. Anything that impedes such interaction must therefore be defined as harmful to an individual since it limits their potential for human flourishing.

But if such a universalistic notion of harm is to be useful for moral audit and more specifically for the moral audit of nanotechnologies, we must be clear about what is required for such harm to be prevented. And it is here that the concept of universal basic human needs becomes so important. In order to optimise the success of an individual's participation in their own culture, certain basic human needs must be met. These needs must be identified in order to assess whether particular nanotechnologies have the capacity to

enhance or diminish their satisfaction: whether the technologies under review will be beneficial or harmful.

For any individual there are two basic human needs which must be satisfied if their capacity for social participation is not to be reduced. These are physical survival and health on the one hand and individual autonomy on the other. Survival and health are fairly straightforward. They can be equated in the first instance with the absence of disease and death and can be measured through rates of mortality and morbidity. Individual autonomy is a rather more complex concept. However we can define it for our purposes here as the cognitive, emotional and social potential for creative participation in different aspects of cultural life.

Individuals will have these basic needs met to a greater or lesser extent. They may be able to achieve more or less physical health and more or less autonomy. And the levels of health and autonomy they are able to achieve will depend on their access to the goods and services required to meet these particular needs. For example, nutrition is crucial for physical health as is education for individual autonomy. Thus physical health and autonomy will vary with different *levels* of nutrition and of education.

Of course, the means by which the goods and services required to meet basic human needs will culturally vary. With nutrition in mind, this is one of the reasons it is so wonderful living in a cultural melting pot like London! However, the measure of success of such goods and services in meeting basic needs will not vary with culture. Some foods and some ways of

making it will be bad for your health wherever you live. So much for cultural diversity – at least for the purposes of this paper.

Any judgement about the potentially harmful nature of nanotechnologies should therefore begin with an assessment of the degree to which they may reduce rather than enhance the basic need satisfaction of those who use it as well as those who produce it. To the degree that nanotechnologies potentially reduce basic need satisfaction in ways that cannot be reliably prevented, they should be judged as harmful and should be rejected.

At first sight, all the news looks good in this respect. Nanotechnology generates enormous potential for enhanced basic need satisfaction and does so throughout the world. As regards the basic need for physical health, the prevention of disease can be aided by more effective technologies for the removal of toxins from the environment and better techniques for desalination of water. The cure of disease can be improved by more targeted and effective pharmacological intervention, along with nanomachine-assisted surgery. Such prevention and cure can lead to extended life expectancy.

As regards the enhancement of individual autonomy, nanotechnologies may be deployed to improve the cognitive, emotional and social skills of individuals through the further miniaturisation and refinement of information technology of all forms. As micro-processing techniques grow, so will knowledge and individual choice. Best of all, these potential benefits of nanotechnologies are applicable not just to an even better quality of life in the developed world but, as Peter Singer and his colleagues in Toronto have

argued, they are of great relevance to improved basic need satisfaction in the developing world.

Thus far then, we can see that nanotechnology has the potential to contribute to the meeting of universal and basic human needs and from that moral standpoint its further development should be welcomed. But our enthusiasm must be tempered by two concerns. On the one hand, nanotechnologies can entail risks that may outweigh their benefits. On the other hand, these technologies can also lead to the unacceptable violation of basic human rights. Let's begin with the risks of nanotechnologies.

These risks have been widely discussed and debated. They include everything from those associated with what Nick Bostrom describes as "extinction" risks (e.g. by out-of-control self-replicating nanobots) to a gradually lessening scale of risks which would not destroy human life but would still warrant varying degrees of concern. For example, military and surveillance technologies can be developed with huge destructive potential for local populations. Some risks may be less serious but still be of great concern. For example, the recent discovery of the potential health risks of some nanomaterials that are not securely contained by other materials of which they form a part indicates the ease with which these might enter the food chain, water table and atmosphere.

Of course, some highly beneficial nanotechnologies appear to pose no risks - which is good for them and us! But to minimise any harmful potential, both the research and the use of nanotechnologies demand effective national and international regulation. There is a wide consensus on the need for this but

less agreement on how it should be done. The Helsinki Declaration which currently provides the underpinning for the moral audit of medical research offers an obvious model for such regulation. With the basic need for physical health in mind, such an approach would require the identification of potential risks and benefits of particular technologies followed by agreement among an independent body of appropriate experts that the ratio of risks to benefit is acceptable for specific types of nano-research or use. For the basic need for autonomy to be respected in this same regulatory process, informed consent would be required from all those research subjects potentially at risk from individual research projects as well as the guaranteed protection of their confidentiality.

To the degree that the nanotechnology in question poses risks for populations and not just individual participants in specific experiments, ways should also be found of effective public representation in decision making about the future of the technology. The endorsement of Helsinki's procedural principles by the World Medical Association makes them especially appropriate as an international baseline for determining the moral acceptability of nanotechnologies, always remembering that most of it is still at a research and development stage.

In many developed countries, the application of the Helsinki Declaration appears to work reasonably well. But as the foundation for international regulation of nanotechnologies, can an approach that limits itself to Helsinki type principles really be that effective? I have grave doubts. These concern the degree to which this approach goes far enough in the stress that it gives to basic human rights. To illustrate what I mean, consider the following two

arguments in support of the claim that all people everywhere have the same human right to the satisfaction of their basic needs for physical survival and health and individual autonomy – the same human right to avoid personal harm.

First, it is inconsistent to deny the universal right to basic need satisfaction to anyone we wish to be a good citizen. If we wish members of our own community or country to behave in ways that we endorse as morally good – to be good parents for example – we must also accept that they need the physical health and the cognitive and emotional wherewithal to do so. It makes no sense to say that someone ought to do something that for practical reasons they simply cannot achieve.

Similarly, if we want those living in countries other than our own to be what we would recognise as good global citizens then again we need to recognise the satisfaction of their basic needs as both a moral and a political priority. Young people in poverty with little hope of escape in this world may opt instead for terrorist visions of a paradise in the next.

This recognition of our global interconnectedness takes us onto the second moral argument for accepting a universal right to basic need satisfaction. This is based on rational self-interest. As John Rawls has argued, those of us who are privileged can never know when we might experience misfortune and lose our access to the goods and services necessary for us to flourish. The realities of globalisation make this argument based on self defence even stronger. Poverty for example may be the breeding ground not only of terrorism but also of infectious diseases which can potentially harm all of us.

The regulatory principles of the Helsinki Declaration do embrace human rights but focus only on what are sometimes called negative rights. These are the rights of autonomous control over inference by others: the right, say, not to be exposed to the potential risks of participating in research without giving informed consent. While this is important for the reasons already outlined, the Declaration neglects what are sometimes called positive rights: the right to be provided with the goods and services necessary for basic need satisfaction in circumstances where they cannot be obtained through the market. Important as the Helsinki Declaration might be for the regulation of risky nanotechnological research, it has nothing to say about the right of people everywhere to the enhanced basic need satisfaction to which such research might lead.

Without the inclusion of a broader emphasis on the distributive justice of such access, I am pessimistic about the feasibility of any effective moral audit of nanotechnologies on a global basis. Why am I so pessimistic?

A conception of moral audit that embraces both positive and negative rights to basic need satisfaction is essential for effective regulation. This is because effective regulation must be operationalised in global as well as political contexts. I say this for two reasons.

First, effective regulation will only be achievable through the generation of political will in the context of active democracies. The history of medical research in particular countries is littered with examples of vested personal and economic interests leading to harmful effects on the health and

autonomy of both research subjects and those who have been the recipients of the products developed. Why should we expect things to be any different with nanotechnology?

Given the potential for abuse of nanotechnological research it is essential that neither military nor any other vested interests are allowed to trump the public good. But as John Stuart Mill knew so well, strong democracies require good citizens who can make effective and appropriate demands on their governments – for example, for the rigorous regulation of risky technology when this is necessary. But, as we have seen, the capacity of individuals to be good citizens in this regard will depend on the degree that their basic human needs are satisfied as a matter of right. If they are too unhealthy and/or uneducated to protest, they are next to useless.

This same point applies with particular force in a globalising world where we can no longer think of politics confined within national borders. On the one hand, it has become a truism that viruses carry no passports. This is why, for example, there is now effectively a world wide ban on further research and development into xenotransplantation. Similar challenges may well exist in relation to R&D in some nanotechnologies. Here again, related potential threats will know no national boundaries.

It seems indisputable therefore, that effective international regulation is essential if such risks are to be managed safely. But given the current configuration of international politics and the unwillingness of some of the wealthiest countries to cooperate on the regulation of something as relatively well understood as global warming, what hope is there for control of

nanotechnologies that are much less understood but may pose important risks?

My pessimism about this is further fuelled by global injustice. For where are the good and active global citizens that might provide effective resistance to the vested interests of the developed world? I have argued that all humans have equal rights to basic need satisfaction. At least as regards positive rights to basic need satisfaction, there is little evidence of this principle being prioritised on international policy agendas. In the context of medical research for example there has been slow progress on the notorious “10/90” gap. Only about 10% of research resources are currently devoted to researching the diseases that kill or disable 90% of the world’s population.

Much the same can be said of the “know/do” gap in relation to the Millennium Development Goals. We know perfectly well how to achieve most of these goals with existing and often very simple technologies. And the money could be made available to do so. But the reality is that they will not be achieved by the target date for millions of people throughout the world. MDG 4 for example calls for the reduction of child mortality by two-thirds by 2015. Recent UN estimates suggest that at present levels of expenditure, this goal will be 150 years late in being achieved!

Forget the levels of need satisfaction required to become transhuman and the ways in which nanotechnology may help us to achieve these. The poverty and lack of resources that these figures represent mean that *the individuals* ← *involved barely qualify as human* – at least as regards their chances of exploring and fulfilling their individual potential. This know-do gap stems

primarily from a lack of political will at a number of different levels. But the literature on nanotechnology has little to say about such problems.

So to conclude, let me argue for an “hypocrisy” principle that should be added to the precautionary principles embodied in the Helsinki Declaration. Without the integration of principles of justice into the international regulation of nanotechnologies, there is little reason for believing that such precautionary principles will be successful. Why should the dispossessed give a damn about helping us to protect ourselves from potential harm when they perceive us as already inflicting so much actual harm on them? Indeed, given the potential cheapness of some nanotechnological weapons, why should they not feel entitled to use them against us? Because they should behave like good global citizens? To make such a claim is a vacuous moral abstraction unless we have taken all feasible steps to meet those basic needs required for good global citizenship to be a reality. What this means is not a moral abstraction. It means delivery on the Millennium Development Goals that have already been internationally agreed.

Thus until the world is ready to act on the positive right to universal basic need satisfaction there is no guarantee that we can safely contain the global risks posed by nanotechnologies. Indeed it follows from the moral audit developed in this paper that conceptions of cyborg citizenship should be shelved until the reality of global citizenship is achieved. Of course, you and I both know that the research and development of nanotechnologies will not be stopped by such moral arguments. Because of their potential benefits, I have no desire for them to be stopped – provided that their potential risks are effectively regulated. However, I hope that I have shown the importance of

putting global equity at the heart of current debates about the future of such regulation.

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