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Nanotechnology in doomsday scenarios

Tinkering with the human body has always been a delicate subject. On one hand, we wish to be disease-free and live comfortable lives; on the other, however, the notion of modifying ourselves on a molecular level fills us with unease. Why? Possibly because we fear that these changes would get out of hand, bringing unforeseeable outcomes, total annihilation of the human race included. Maybe it's because we do not wish to face "upgraded" super-humans, who outdo us in every field. What would happen, though, if we were simply left with no alternative solution?

I believe that at some point in the foreseeable future this will become the case. The thing forcing us to make a hard choice will be our own carelessness. For many years now we have been expanding uncontrollably, sacrificing our environment in the name of progress and comfort. This will end and quite soon at that. Either that or we will – as a race. The prognoses do not paint a bright future ahead of us. A continual increase in CO₂ emissions (to name just one of the factors) will continue to wreak havoc on our ecosystem, destabilizing it further and further. If we do not take drastic steps now, we will need to take even worse ones later. At some point we will no longer be able to survive in the deteriorating environment without some form of augmentation. Then all social prejudices will rapidly be forgotten. We will no longer care about the possibility of mutations or inequality. Then another question will arise: what do we change? We could either forcibly adapt our bodies to high environmental stress or try to reverse the damage to our ecosystem. The first case is only a temporary solution. We could use gene modification or non-organic augments to be able to tolerate the hostile, polluted environment we've created. It is certain that many would die in this scenario. Even if the treatment itself had a 100% success rate we wouldn't be able to perform it quickly enough. The silver lining would be that the death of a significant portion of society would reduce the stress on our environment. If there were fewer of us, we would use up less of nature's resources. That's small comfort to all those billions dead, however. The other option, reversing our destructive influence, is not as gloomy. It does, sadly, require us to act sooner, before our planet decides to kill us. And we all know that people in general are not great at preventing disasters. If we do not see something, we tend to ignore it until it's too late (take global warming, for instance). If we, however, somehow managed to convince (or maybe even force) society to see the dangers, then we could act in advance.

Reducing the ability to breed is an extremely controversial idea, rightly so. Desperate times, however, call for desperate measures. We could engineer a gene sequence that is expressed in the female body during birth (possibly activated by high hormone levels present during pregnancy) and causing the subject to become sterile. If every woman could only bear a single child, our population would shrink quite rapidly, no deaths required. When we are no longer too numerous to sustainably use Earth's resources, the sequence could be deactivated, leaving us free to have as many kids as we pleased. Now how would we go about splicing the sequence into our DNA? Here is where nanotechnology comes in handy. A viral vector that we would unleash upon the whole population is far too great a risk. The mutate far too often to be reliable on a mass scale. Nanorobots, on the other hand, seem like the perfect vector. The technology is currently nowhere near as advanced as it would

need to be in order to let it change our genome, but it will be developed at an increasing rate as we begin to realize its enormous potential. Envision miniscule machines that detect certain proteins in our cell membrane and enter only those specific cells, where they alter chosen parts of our DNA. They could possibly even multiply within us (so far it seems like Sci-Fi) and be transmitted from one person to another, reducing the cost of any treatment and greatly increasing the speed. You would only need to "infect" a tiny percent of the population and soon everyone would have the machines in their bodies.

The technology isn't only useful in doomsday scenarios. Many of our everyday problems would be fixed with the help of nanobots. Cancer? Genetic disorders? With nanotechnology we could battle them much more effectively.

Summing up: A moment will come when we will need to make very hard choice. Nanotechnology will make that choice slightly easier for us, as well as possibly help us to avoid making it altogether.