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Interview with BJ Klein

The Immortality Institute is a non-profit organisation dedicated to promoting ideas and developments geared towards ending involuntary death and expounding immortalism as a practical philosophy. This essentially forms an umbrella term encompassing cryonics, nanotechnology, genetic modification and various other ideas tending towards the same purpose of extending lifespans. These ideas are controversial on a number of fronts; the feasibility of these ideas and technologies, their implications on our environment and resources and their philosophical implications. Bruce J. Klein, Director of the Immortality Institute, was kind enough to answer questions on these issues.

How well do you feel are infinite lifespans matched to finite environmental resources? Given popular resistance to the most basic forms of genetic modification, can we rely on science and technology to keep pace with expanding lifespans?

In short, Yes. We can keep pace with population growth and we can steward environmental resources successfully. Chiefly because we're already been successful thus far, and looking forward, because fine-tuning and skill at manipulation of matter will only improve.

Creativity and ingenuity are infinite in capacity so long as we have something to do. There will always be problems to solve and better ways of solving them. As humans strive for a better life, this drive will propel technology and requisite efficiency gains further into the future.

Granted, this doesn't preclude the possibility of some catastrophic or unforeseen external or internal event happening. Life, of course, has been devastated on numerous occasions by asteroid impacts and we seem to have the dangerous urge to blow each other up. Yet, the 'engine' of creation, as Eric Drexler's says it, continues to hum along. And as Ray Kurzweil rightly points out, it's all happening at an accelerating rate.

Yet, social resistance to change is a constant. There will always be some degree of resistance because of our evolutionary heritage. Our ancestors were successful reproducers not because they took great risks. They were successful on the whole because they were risk averse. Thus, evolution has selected for humans who were somewhat resistant to change but not totally closed to opportunity. Once the benefits are made obvious, resistance turns quickly to support.

Remember the clamoring over 'test tube babies'? In the early 1970's, nearly all bioethicists warned against in vitro fertilization (IVF) and 80% of the American public opposed test-tube babies. Today, over 100,000 babies exist - 200,000 worldwide, from IVF. And now about 80% of Americans support IVF.

In the event that finite resources and infinite lifespans conflict with one another, to what extent is there likely to be a trade-off between increasing lifespans and increasing birthrates? Can we rely on the European pattern of falling birthrates and increasing lifespans being repeated elsewhere?

Well, this question implies that there is an inherent 'finite resource' problem. I tend to disagree. As alluded to in the first response, as long as humans seek a better life,

creativity and innovation will necessitate and result in more efficiencies and greater degrees of fine-tuning. This will lead us to even more innovation, creation and efficiencies. Pretty much what we see now, just more of it.

Extrapolate the pattern of improvement towards some possible conclusion, and one can make some pretty far out predictions. One is that we'll eventually have control over every atom in the universe. Moravec, Tipler, Perry and others have postulated these futures, but I'll just say here that I believe it is theoretically possible. I would also like to note that I believe we'll experience a 'Singularity' from this process. But that's another topic.

Also, while answering this question I happened upon the following quote from a U.S. News article by Jerry Taylor, a resource specialist at the free-market Cato Institute.:

'While it is counterintuitive to many people, natural resources are not fixed and finite; they are created by mankind, not by Mother Nature. Since resources are a function of human knowledge, and our stock of knowledge has increased over time, it should come as no surprise that the stock of physical resources has also been expanding.' [1]

Taylor goes on to give examples from the oil industry, but I believe his overall assessment is correct and applicable to all areas of human achievement.

In answer to your question about birth rates, first if all, humans may not always want to have children, or at least at such a fast and furious clip. If people knew they were to live for hundreds even thousands of years in good health, the drive to have children would certainly decline.

Importantly, the introduction of the birth control pill in the 60's has given women a choice and gives us a hint at what's to come. If not specifically because of increased lifespan in the past few centuries, but surely a contributing factor, women are choosing to have fewer children later in life. Also the children they are having are for the most part surviving. This is a big advance over the past many children died before their first birthday. Today, the need to have many children to ensure that at least some will survive is no longer necessary.

Overall the trend looks promising, especially in the lesser developed countries where we see a rise in the standard of living because of free market expansion. Chiefly powered by a growing entrepreneurial drive, goods are now being produced more cheaply and productivity gains are being realized as centralized governments tend to sell their monopolies businesses and assets to the private sector. Economist Fredrick Hayek said it best in 'The Road to Serfdom':

Only since industrial freedom opened the path to the free use of new knowledge, only since everything could be tried - if somebody could be found to back it at his own risk -- has science made the great strides which in the last 150 years have changed the face of the world. The result of this growth surpassed all expectations. Wherever the barriers to the free exercise of human ingenuity were removed, man became rapidly able to satisfy ever-widening ranges of desire. [2]

Or just visit a country like Vietnam and learn about its rapid growth in just a few decades.

How much of a problem is access to the technologies that are the 'gateway' to immortality, given the likely expense? In particular, won't economic inequality always bar access for certain sections of the population? And in areas like Europe and Canada with state funded health services what is the likelihood of them even being offered?

There will always be differing degrees of quality in service and accessibility to health care. Providing advanced health care services is an expensive business and we're starting to see some strain on the system as we grow older and live longer. However, the goal should not to achieve some sort of perfect parity, rather we should work for a complete balance. We should allow the system to work to improve itself. We should allow for competition, not impose overbearing regulation. Granted, a certain amount of regulation is needed, but the balance is always safer on the side of less, especially in the long run.

But more specifically to the question of 'gateway' technologies and immortality; looking to examples in the past as a guide can be helpful. While, automobiles were only for the rich at the turn of the century; today, most Americans of legal driving age have a car. I believe health and longevity care to be no different. Having access to health and life extension technologies will be a universal want, because of this, the cost on a per person basis will drop with demand. Free market forces are powerful and work, just as they have worked with other technologies (i.e. cars, televisions, computers, you name it).

Inequality and social instability have always been closely linked and some have predicted that technologies like genetic modification may lead to social unrest. How much of a concern is this?

As suggested above, a free market economy with few restrictions will allow human innovation to help with the dispersal of wanted goods. Social unrest in the past was largely due to overburdening regulations by governments. Large corporate monopolies are a worrisome possibility as well. I would not count out a scenario where one biotech company could possess the elixir for immortality. But the chances are slim for a couple of reasons.

a) The problem of aging is a complex one. The disease of aging it's a multifaceted intercellular problem. No one genetic, hormone, or stem cell therapy could possibly solve the problems of aging. So, no one company would likely have enough resources and manpower to corner the market.

b) The current system of government is sensitive to monopoly power (i.e. Microsoft) and would quickly conspire, especially with public support, to break up any life extension monopolies.

Cryonics seems to be a key theme for the immortality institute. However, this is a controversial area. In particular, it is argued that not only are suspension procedures not meaningful currently and that current cryonics facilities are therefore essentially identical to Sutton Hoo or the Pyramids: elaborate tombs constructed with a false expectation of an afterlife. Is this a fair view, and if so do you feel such facilities damage the work of the Immortality Institute?

Not at all. Cryonics is a cornerstone in the foundation of the modern immortalists' movement. Cryonics is a legitimate, tangible manifestation of the human desire for continuance.

There is nothing wrong with cryonics from my point of view. There is justifiable concern, however, for its effectiveness. For instance, there is a point after death where cellular damage is just to overwhelming and cryonics would be useless. Some have speculated just two hours, maybe more. I'm not sure. But, as a safety net, nothing is better than cryonics at the moment. As Ralph Merkle once said: "Would I rather be in the control group, or the experimental group?" [3]

Also, cryonics is important for bringing the debate about immortality to a larger audience. When the Ted William's story hit, it was in my impression that it was an overall good. It gave us a common starting point, a common person or face to associate with the idea. It has raised important questions as to why someone would want to preserve their body after death.

Another issue is that even with nanotechnology to repair tissue damage; suspensions may remain, since the charge fields used to store memory decay as entropy sets in during cryonic preservation, so that any re-animation would be of a being devoid of memory, and by extension personality. How significant an issue do you think this really is?

The most powerful argument for the success of cryonics is that almost all molecular decay stops if suspended in liquid nitrogen.

If preserved as soon after death as possible, the tissues, the brain cells, the information that makes up the mind, if held at liquid nitrogen temperature, which is -196 degrees Centigrade, will last for thousands, possibly millions of years. So, if humans haven't found a solution by this time, it's probably safe to assume that something very bad has happened and concerns for any cryonics patient will parish as well.

Nanotechnology and genetics both seem important themes for the Institute, but both are very politically sensitive areas. Realistically, surely political and legal changes will always be one step ahead of scientific changes? Will these technologies survive regulation? How much of a problem is it that advances in fields like cloning may be left to countries like China?

Actually, politics and law seem notoriously to fall behind the times when it comes to advanced technologies. Only after public outrage or perhaps a sensational episodes do we seem to enact promotive or prohibitive legislation (i.e. Raelians).

There is little legislation controlling the really important technologies. The internet, a profoundly important and is still untaxed as an example. Artificial intelligence research is largely ignored by politicians, but it's impact will be enormous. There has been no public outcry to ban a potential 'Hal', except from the likes of Bill Joy and a few others. AI represents much more of a threat or benefit to humans than cloning ever could.

John Wyndham suggested (in his novel, The Trouble with Lichen) that short term lifespans lead to short-term perspectives - how would we expect our conception of the world and ourselves to change with expanded lifespans?

One consequence of immortality might well be stasis, that it is the waxing and waning of the generations that brings change and progress, for example. Wouldn't even Einstein or Shakespeare run out of ideas eventually?

I don't think Einstein could have ever run out of ideas. Did you know, Einstein was still working on a unified theory in the last day so of his life in 1955? We still haven't found a unified theory nearly 50 years later. So, would we expect Einstein, if he were still alive, to simply stop asking questions? Let's say he succeeded in solving all the problems of the universe. Wouldn't this lack of problems to solve be a problem itself? And would Einstein just give up at this point and cease in finding an answer? Maybe if he was physically tired, that'd be plausible, but if he had solved all problems, he would have also solved the problem of being tired as well.

Fittingly, Hans Moravec writes in his prelude to his book 'Mind Children' [4]:

"A mind would require many modifications to operate effectively after being rescued from the limitations of a mortal body. Natural human mentality is tuned for a life span's progression from impressionable plasticity to self-assured rigidity, and thus is unpromising material for immortality. It would have to be reprogrammed for continual adaptability to be long viable. Whereas a transient mortal organism can leave the task of adaptation to the external process of mutation and natural selection, a mind that aspired to immortality, whether it traces its beginnings to a mortal human being or is a completely artificial creation, must be prepared to adapt constantly from the inside." [H. Moravec 'Mind Children' 1988]

I agree with Moravec to some degree. Biological minds are at a huge disadvantage to change and self-improvement. It takes 10 to 26 years of expensive education for humans to become informed enough to be of benefit to our society. While, a computer can learn (download) a new skill in minutes.

Will a biological mind be incapable of living forever? I don't know for sure, it doesn't seem impossible though. I could envision some people feeling more comfortable keeping their biological bodies. Yet they'd probably need nanobots residing within them and their brains to fix oxidation damage and averting Alzheimer's disease and cancer and a tone of other problems. And there's also the risk associated with walking around in a delicate biologic bag. I certainly wouldn't opt for biological immortality especially if given a chance to live in more durable substrate.

Steven Pinker was once asked about the possible number of sentences that could be structured. He said:

"I think they're literally infinite, in the mathematicians' sense that there is an infinite number of numbers. Of course, there isn't any room in the universe to store an infinite number of numbers, or an infinite number of sentences, but we can infer that in principle the number is infinite." [5]

While Pinker may not exactly satisfy the question of running out of ideas, the fact that there are an infinite number of potentialities is a promising fact.

John Harris at a 2002 lecture for the International Longevity Center once said:

"many people, perhaps most, would be prepared to endure the long, dark teatime of the soul, or its equivalent, in exchange for permanent remission of the death sentence that we are currently forced to live with. Indeed, there is much evidence both from literature and in the literature, the scientific literature, that suggests that many people are willing to trade off quality of life for longevity. From the pact of Faust, celebrated by writers from Marlowe to Goethe, to Bram Stoker's vampires, to choices made by cancer patients with terminal diagnoses, the evidence is very strong that people want extra lifetime even at substantial cost in terms of pain, quality of life and even when the outcomes are highly uncertain." [6]

Virus describes itself as a means of attaining immortality without resorting to mystical delusions, largely referring to memetic immortality. How compatible is this with the institute's idea of immortality?

Right, as Mike Perry, author 'Forever For All', said, "Immortality is mathematical, not mystical," [7]

I hope I'm not reading the question incorrectly, but the Immortality Institute is focused on the 'physical' side of immortality not necessarily 'memetic' immortality. I'd much rather be unknown and live forever, rather than be famous and only live fore a few decades.

As I understand Meme:

"MEME: (pron. `meem') A contagious information pattern that replicates by symbiotically infecting human minds and altering their behavior, causing them to propagate the pattern. (Term coined by Richard Dawkins, by analogy with "gene".) Individual slogans, catch-phrases, melodies, icons, inventions, and fashions are typical memes. An idea or information pattern is not a meme until it causes someone to replicate it, to repeat it to someone else. All transmitted knowledge is memetic." [8]

Would immortals feel the same need to propagate their memes without the need to bequeath them to future generations?

The immortality institute's mission is "to conquer the blight of involuntary death"[9]. Bequeathing and propagating memes, unless of course it's the idea that living forever is a potential good, is not necessarily our main focus. Our goal is to be the best forum for discussion and repository of information about immortality on the web.

To what extent would someone be the same person after living for hundreds of years? Do you envisage a limit to our capacity for self-reinvention?

No, there's no limit as far as I can tell. We're different by the second, by the day, by the year without detrimental effect. Some of us even get better with time ;) . Other get worse. But who's to judge really? It's really a choice that should be left up to the individual. If they decide that they've had enough life, that's fine. It's their choice. No organization should have the power to keep anyone alive against their will. However, organization should have the freedom to offer information and suggestions on how to live longer.

The entire idea of evolution is the continual adaptation of organisms to their environment. Doesn't immortality run the risk of leaving us progressively more poorly adapted to a changing environment?

Evolution is painfully slow and brutal. On the other hand, we have information technology, biotechnology, and now nanotechnology, which offers a more humane alternative. I believe transhumanism is a natural progression on our evolutionary road grater complexity and greater intelligence and understanding of the world.

Think of it. We are humans creating technology of the physical world around us to improve our lives in that physical world. Is that inherently bad? Should we not try to improve our lives? How far do we go in either direction? Can we just stop where we are now and say fine this is 'Enough' as Mckibben would suggest:

"It is clear that these revolutionary technologies are being driven by people with immortality, or something very near it, on their minds. In genetic engineering circles, much talk in the last year has centered on the promise of longer lives. As Danny Hillis, a computer scientist, says, "I'm as fond of my body as anyone, but if I can be 200 with a body of silicon, I'll take it." One odd thing is that it is precisely this same class of thinkers — hyper-rationalist scientists, who have long sneered at religion as the refuge of the weak — who can't face the fact of their own mortality. But clearly their own discomfort with mortality goes so deep that they will risk not only the dangers that come with genetic engineering, but even the loss of meaning that will attend this post-human future." [10]

Would not a society run by four hundred year olds become extremely conservative? For example, would Jefferson have been able to deal with gay rights? Would Lord Palmerston have been able to make decisions on contraception?

Jefferson was president for two terms, mainly in gratitude to Washington's example. All presidents, except for Franklin D. Roosevelt, followed this example. The 22nd amendment made it law.

A society run by stodgy, inept 400 year olds would reflect badly on the underlying system not necessarily the individuals running the system. I would hope that over time there would be safe mechanisms in place to replace bad leaders with good ones. Much like what we have today with our non-violent presidential elections and in extreme cases impeachment.

I believe that longer life is an overall good for society. Acquired knowledge is gained by individuals and thus retained for more years in tangible form. Knowledge can be passed on to younger generations in books, while at the same time retained in it's primary source.

Life is much better by most measures since we've started to live longer. So long as we keep the free market system in balance and government corruption to a minimum, the system can take care of itself.

The question of immortality raises questions about predicting our future development. For example, the development of AI to assist with nanotechnology. Assuming that the AI is self-adaptive and evolutionary (and has greater capability than humans), would not the imposition of

constraints as envisaged by Eliezer's Friendly AI theory be interpreted as a means of subjugation, thereby creating precisely the grounds for breaking the constraint? What are the prospects for immortality as set against the prospect of an AI Sapiens at odds with the Neanderthals?

The question of AI is an important one. Our success or failure in designing a self improving program will likely decide the future of humans and possibly all life on earth. I agree with Eliezer's Friendliness theory. We must get it right the first time.

The question of subjugation and constraints is wrapped up in the discussion of creating AI. There is much contention here about what is moral and ethical. I contend however that's AI development is inevitable and it's imperative that we find some solution that will keep us all alive. We will create greater than human intelligence, or die trying.

As for immortality and AI, I would speculate that a successfully created Friendly AI would bear in mind the wants of humans. I would also speculate that the greatest of all human wants is the desire to stay alive.

Endnote

To begin with, we identified a number of themes; the feasibility of these ideas and technologies, their implications on our environment and resources and their philosophical implications.

The philosophical implications are particularly difficult to ascertain; at present the nature of our being is to a large extent defined by its finitude. It is almost impossible to conceive what a being not defined in such terms would resemble; in that sense it would be more truly post-human than the term is typically held to encompass. On the other hand, the more empirical implications seem clearer. For example, it is difficult to rely on falling birth rates to avoid over-population and expect to avoid an increasingly aged and conservative political class.

One particular point I remain sceptical on, regarding feasibility, is cryonics, where prevention of decay is not equivalent to constant maintenance of charge fields without which entropy will set in. Preferring to be in the experimental group to the control group is in essence Pascal's Wager in the age of Cold Lazarus. A difference in degree, perhaps, but not in kind.

Similarly, the question of AI represents Banquo at this particular table; given the controversy over the rights of sentient animals such as apes and whales, it hardly seems that the question will be avoidable when applied to entities whose intelligence is likely to outstrip our own. Since the likely response of society will exactly be to avoid it, future AI may find it difficult to bear in mind the wants of humans when we are unlikely to reciprocate. See: <http://virus.lucifer.com/wiki/spirothete>

A fuller statement on Virian ideas concerning cryonics, can be found at:

<http://virus.lucifer.com/bbs/index.php?board=31;action=display;threadid=25353>

Reference:

1. July 17, 2003 article from U.S. News, with an answer by Jerry Taylor, a resource specialist at the free-market Cato Institute.
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2. FA Hayek, The Road to Serfdom, quoted at <http://jim.com/hayek.htm>
3. <http://www.merkle.com/cryo/>
4. H. Moravec 'Mind Children' 1988 page 5
5. Pinker: <http://www.williamjames.com/transcripts/pinker1.htm>
6. John Harris SEPTEMBER 24, 2002 hosted by the International Longevity Center (ILC) New York
<http://www.imminst.org/forum/index.php?s=&act=ST&f=69&t=1423>
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10. McKibben: <http://resurgence.gn.apc.org/issues/mckibben212.htm>