

## JOHN HARRIS - LECTURE - SEPTEMBER 24, 2002

Dr. Butler: For those of you who are coming to this great institution, the lecture tonight - the Harold Hatch International Lectureship in Aging is the product of both the Department of Geriatrics at the Mount Sinai School of Medicine and the International Longevity Center. The Hatch Lecture is based upon the contribution from the Hatch family that honors Harold Hatch, who, in the spirit of this evening, lived to 102 years of age. So we are talking about a remarkable centenarian, the family of which helped make possible this opportunity to bring outstanding figures from Europe, or Asia, or anywhere in the world, to bring to us their ideas and thoughts.

I would like to also identify Dr. Diane Myer and Dr. Sean Morrison, both of whom I believe are in this room, who are endowed professors at the Department of Geriatrics and who reflect the joint sponsorship which I have noted. Also I am happy that we have members of our Board of Trustees of the International Longevity Center, Susan Dreyfuss and Mary Carswell here. After the evening's discussion, which I know you will have very provocative and interesting, there is a reception.

The discussion of intimations of immortality, rather than mortality, is the subject of the evening. We have been very fortunate to have Dr. John Harris with us these last several days and it really has been a remarkable pleasure. I am not going to read his many accomplishments, because you have them in your program. Except to say that he is not only an outstanding philosopher in bioethics in Great Britain, but known throughout Europe and has many friends in America as well. But we did learn a few things about him during these several days which are rather scandalous and I thought maybe we might reveal them at this time.

One is that he was not a scholar from the beginning of his career, and actually wound up for some period of time as a salesman, as I recall. Only to finally get the academic bug and what this does is demonstrate the inaccuracy of Scott Fitzgerald, at least insofar as Scott Fitzgerald, the great writer, said "In America, there are no second acts." Because he has really demonstrated a second act of enormous capability, creativity and accomplishment.

So John Harris also has demonstrated an interest in good physical activity and so to honor him, we are going to make available one of our famous Digiwalkers, that are created by the

International Longevity Center. Some of you know that some 61% of Americans have managed, through various nefarious means, to be overweight or more than overweight, and so we are on a tack in our Center to try to help people address this by 'energy out' as well as 'energy in'. And if you can just take 10,000 steps a day that helps maintain good health. So Doctor John Harris, in exchange for your presentation, let me present to you the ILC Stepcounter.

(Applause)

**Dr. Harris:** Thank you very much. Thank you very much indeed. I am very honored to accept this wonderful Stepcounter - I thought you told me when you were discussing this earlier, that it was 2,000 steps a day, I didn't realize I was going to have to do 10,000. So this is a real challenge.

First let me record my deep appreciation of the honor to be giving the Harold Hatch International Lecture for 2002. It's a really great pleasure to be back again in New York and this wonderful and now city world famous for its courage, it is a great pleasure to be here. And I would like also to thank all of the staff at the International Longevity Center for giving me such a wonderful welcome to this city and this country. I am having a great time.

I should issue a health warning, rather like on the package of cigarettes that none of us smoke anymore. I am a philosopher. This is a very sad fact for you, because it has a very important consequence. It means that I use no visual aids that were not familiar to Plato. Now, I did ask the Longevity Center, if they were able to provide - for those of you who know your Plato - if they were able to provide a cave, and a very large fire. But unfortunately, large fires in a building such as this are not most welcome. So in the absence of those time honored visual aids, I am afraid you just have a talk for about 35 to 40 minutes - I hope you're up for it. Please feel free to interrupt - I shall ignore all interruptions until the end. But there will be a chance for questions and I am hoping that there will be both questions and objections. I am following my other rule when talking to audiences, which is for safety sake, I always believe in speaking with my back to the wall and very near an exit, and I'm very pleased to say that both those conditions have also been provided by the ILC.

My subject this evening is the development of therapies and treatments which may not only cure or prevent diseases, but may also extend life expectancy. I believe that the consequence of such

possible treatments, the consequences have yet to be taken sufficiently seriously, and I want this evening to set out some of those consequences and discuss their implications.

At the moment, I say, at the moment, we are all programmed to age and to die. But maybe, just maybe, it doesn't have to be that way. If cells weren't programmed to age, if the telomeres that govern the number of times that cells may divide, didn't shorten with each division, if our bodies could repair damage due to disease and injury from within, we would certainly live much longer and much healthier lives. As many of you will know, from all over the world, research is being reported which, if it comes to fruition, and I must emphasize that's a very big 'if', but if it comes to fruition, could constitute not only a major contribution to the treatment of disease and of injury, but which could in principal lead to the indefinite extension of life. To the extent, perhaps, that we would start to think of people who had received those therapies as genuinely immortal.

Cloned human embryonic stem cells appropriately reprogrammed might be made to colonize particular tissue and organs triggering constant regeneration. Precise combinations of growth factors injected directly into muscle and tissue might put the body into a state of constant renewal. If we can discover the genes that trigger the aging process and switch them off, particularly if we could do that in the early embryo, then we could possibly, in Lee Silver's words, "write immortality into the genes of the human race". In the long term, then, it may be possible to switch off the aging process in cells and also it would have to be also this as well, also program the cells to regenerate. If all the cells of an individual had their aging program switched off, and could be programmed to regenerate, then the immortality this would confer on the cells would be passed on as cells multiplied and differentiated, eventually affecting every cell in the body as it was formed. The resulting children, if we could produce them, would be truly immortal. Of course, there is a long road between therapies that will result in modest extensions of life of the sort that are in prospect now, to the heady prospect of writing immortality into the genes of the human race. It seems safest to assume that we are likely to start with targeted therapies for particular conditions which, because they involve tissue or cell regeneration, will result in longer life expectancy. Later, probably much later, we may learn how to combine such measures with the ability to switch off the aging process. The road to immortality will be long, it may never be reached, but it is important to start thinking about the implications and the consequences of life extension now.

As I say, although the technology may be far in the future, we need to think about it now. There are many good reasons for doing this. The first of course, is that once a technology has been developed, it acquires its own momentum. And it may be very difficult to stop it or control it, even if we want to. But equally, fears that are provoked in the panic that may follow dramatic developments, those fears may prove to be unfounded. And acting precipitously on those fears may cut us off from real and substantial benefits. So for both those reasons, we need to go in for what is now often called horizon scanning. We need to look beyond the end of our noses and try to decide before things happen whether we like the idea of them or not. Horizon scanning is not simply voyeuristic. It is not simply science fictional. It can enable us to choose the futures that we want, and to prepare sensibly for those futures. Or it can forearm us against futures that while undesired, are not such as we can legitimately or realistically prevent.

Now I believe for reasons that I am going to come onto in a moment that increased longevity, whether we desire it or not, is not the sort of thing that we are going to be able to legitimately prevent. And I'll try and say why.

Increased longevity, and its logical extension, some would say it's *reductio ab absurdum* immortality having a long history. Certainly, the human imagination is familiar, very familiar with the idea of immortals and indeed with the idea of immortals and mortals living alongside one another and interacting. And indeed, mating, very often, if you are familiar with the Iliad, the Odyssey, and many other ancient texts and of course, other texts such as the Bible, the Koran, the Ramayana, Shakespeare's plays, have all made the idea of mortals and immortals living together and interacting familiar. Even modern classics have taken seriously the possibility of immortality. I can't resist drawing to your attention - I am sure you know of it - what I think is one of the most important contemporary works of philosophy by a truly brilliant philosopher who tragically died, actually in California, quite recently. I am referring, of course, to Douglas Adams and his famous five part trilogy *The Hitchhiker's Guide to the Galaxy*. If you are not familiar with that book, please do get yourself familiar with it. It will be a delight. In that book, Adams imagines a man who had achieved immortality by accident.

I quote "To begin with, it was fun. He had a ball, living dangerously, taking risks, cleaning up on high yield, long term investments, and just generally outliving the hell out of everybody. But in the end, it was the Sunday afternoons that he couldn't cope with. And that terrible listlessness that starts to set in at about 2:55 when you know that you've had all the bars that you can usefully

have that day, and that however hard you stare at any given paragraph in the newspapers, you will never actually read it. And that as you stare at the clock, the hands will move relentlessly onto 4 o'clock and you will enter the long dark teatime of the soul." Now despite the apparent pessimism of this passage, 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.

Now, one thing we should note before continuing, and it is that of course, immortality is not invulnerability. To be protected from aging and from the diseases of old age that kill us, does not make us invulnerable. There will be many diseases that may still prove resistant even to those with immortalizing therapies coursing through their veins and of course, the development of new threats to human beings, like HIV/Aids, or Varian Kreyfeld Jacob disease, have shown us that disease itself is very good at adapting in ways that defeat our best laid plans. If we add to this diminishing effect of proven therapies, such as anti-biotics through the emergence of anti-biotic resistant bacteria, it is difficult to predict precisely the level of premature deaths that might effect even immortals.

Human generations, it seems to me, will undoubtedly succeed one another, even if we are able to make people immortal, but probably, or possibly, at a slower rate. For these sorts of reasons, fears about the effect of being able to engineer longevity into human beings, fears of the effectiveness on population, are, I believe, greatly exaggerated. The truth is we don't know what effect making people live substantially longer will have on the world's total population. For all sorts of reasons, some I have just mentioned, new diseases, people will still fall under buses, people will still be shot in countries such as this, that has a celebration of firearms, there are many risks that will remain. Also, there are all sorts of other reasons why overpopulation might fail to emerge. One of them is that immortalizing therapies will be very expensive, and very difficult. Probably they will have to be done in the early embryo so that only people who are prepared to be very circumspect about procreation - something that human beings have proved singularly incapable of being over many generations - will be able to avail themselves of the

most successful forms of this treatment. So when you hear people say that it will be disastrous for world populations, it may be, but we don't know and we have no way of predicting what the precise effect will be.

One of your compatriots, Steve Austed, has calculated an average life expectancy for immortal people, if we could make people immortal, he reckons that they would live on average about 1200 years. Now this is completely irrelevant to my argument, but I can't resist sharing with you the basis of this calculation.

Steve Austed bases this figure on the death rate of eleven year olds. Eleven year olds have stopped dying of childhood diseases, and they haven't started dying of the diseases of old age, so if you can work out a death rate for eleven year olds, and extrapolate that to a possibly immortal population, you will get a figure of - well, you'll get a figure and Steve Austed assures me that that figure is 1200 years and I think actually his calculations are slightly biased because I am sure that he has looked at the death rate of eleven year olds, in societies like North America and Europe, and not in the life expectancy of eleven year olds in Sub-Saharan Africa, for example, or in parts of Asia. So the figure may not be right but it is an interesting way of arriving at the calculations.

So - we don't know when or even if immortalizing technologies could be developed. I hope it's clear, by the way, that I'm just going to use the term immortal to mean anything from quite modest extensions of life, twenty, thirty, fifty years if we can do it, to the sorts of extensions where people will be truly immortal in the sense that their cells would not age, their body systems would not age, and they could repair damage as it occurred. We don't know when this will happen. And, of course, it is also possible that even if the substantial degree of residual vulnerability that we all have could eventually be modified to reduce the total vulnerability. In other words, if we can make tissue and bone, for example, regenerate, so that even if you fall under the bus on Fifth Avenue, you may be reparable in a way that you are not at the moment.

One thing we do know, though, and I have already alluded to this, is that the technology required to produce results like this will be very expensive. It will be accessible for not just the foreseeable future, but probably indefinitely, only by a few, only by a rich few, only by rich societies. Now this fact, I think, is one of the chief moral reservations one must have about immortalizing technologies. Because it will lead to a feature that has not been much noticed.

And that is, a double feature really - we will have within any society, including the richest like yours here in the United States, or mine in the United Kingdom, we will have parallel populations. We will have people who have been able to avail themselves of life extending therapies, and people who have not. And they will have to co-exist, and if and I have begged this question throughout my talks so far, if long life is a good thing, and I hope we will come onto discuss whether it's good, but if it's good, then some people will get further benefits and others will be further relatively deprived. So we will have a bifurcation of success in terms of longevity within societies. And these parallel populations will not only exist within societies, but they will exist between societies. There will be societies like America, and Europe, who are able to avail themselves of these technologies, to some extent, and other low income countries who probably will not be able to avail themselves of this at all. So global justice, or rather global injustice is also likely to be exacerbated.

Does this constitute a telling argument against life extension? I think it is an unattractive feature of it, but I don't think it's a telling argument against life extension. For this reason - that we, and I invite you to share this thought with me, we do not normally believe and if you do, I'll be interested to hear from you in a moment, we do not believe usually that we shouldn't do good for some, unless and until we can do good for all. At the moment, for example, we can't give kidney transplants to all that need them, even in a society like the United States. Let alone globally. But we don't think the right policy is not to do any kidney transplants until they can be provided for everybody. What we usually think in circumstances like this is we should do as much good as we can, even though we know that this will leave some people untreated, some people relatively deprived. If longevity is a good, then I assume we will also think of longevity that we should not deny it to some unless and until we can provide it for all. Despite the effects on justice within societies and global justice. Now, of course, that raises another important issue. And that doesn't mean that we can just necessarily legitimately provide it simply to those who can afford to pay, or simply on some other basis of privilege - we do have a responsibility to provide scarce, life-saving resources in according to some fair, just, appropriate principal of allocation and it makes it an even greater priority to find such a principal. And of course, I should note that both your society and mine have not been very good at establishing such a principal for the scarce resources that we have at the moment, and it is to our mutual shame that we failed to do this. But assuming that we are willing to take up that particular challenge, then I think the fact that we can't provide life extension for everybody is not a reason for denying it to some people.

There is another important dimension of life extension that I want to discuss. Philosophers like simple questions - we like to pose a question and ask 'Is this right or isn't it? Should we do it, or shouldn't we? And what are the reasons for and against?' And it would be nice to think that the question 'Should we introduce life extending therapies? Should we introduce immortalizing therapies?' might be a question like that - that philosophers could puzzle over, and come up with the right answers, as we usually do. But I don't think it is such a question, and I think it's important to consider why not. I don't think we either as individuals or as a society will ever be able to face the question 'Should we produce life extending therapies or shouldn't we? Should we make some people immortal if we can, or shouldn't we?' And the reason we won't be able to do this is because to start with, life extension is likely to come on the back of therapies for particular diseases. The most likely candidate is using stem cells as a therapeutic agent. Stem cells because they have proved their capacity to enable tissue to regenerate. The regenerative powers of human stem cells, whether from embryos or from adults, is why everybody is so interested in the question of using stem cells. So what I believe is likely to happen is that a therapy, let's say, for Parkinson's Disease will be developed, using stem cells, and this will cause not only repair, but regeneration of the brain, and the brain will live longer as a result. And then we may be able to produce stem cell or analogous therapies for, let us say, the cardio-vascular system and that will be able to regenerate itself. And so on. And the result of it is that those people treated in these ways will start to live longer, because their brain, their cardio-vascular system, other bodily systems, will be able to regenerate possibly indefinitely. And these people, the people thus treated will live substantially longer than the rest of us.

So what will happen is we will not ask the question 'Should we make people live longer, yes or no?' we will ask the question, 'Should we treat Parkinson's in this person? Yes or no?' Even if the effect of doing so will be that they will live longer. And we won't be able to deny somebody therapy for Parkinson's, I believe, we won't be able - we won't have it in our hearts to deny them the therapy for heart disease or whatever, because a possible unwanted side effect of that therapy will be that they will start to live substantially longer. So we will have a sort of creeping longevity which will come on the back of therapies for particular conditions. So much so that in the end, it won't matter much whether what we have is longevity on the back of a - if you like, as an unwanted side effect of treating Parkinson's and heart disease - or whether we have effective treatments for Parkinson's or heart disease on the back of immortalizing therapies. Either way, the moral imperative to treat disease and to alleviate suffering will be so powerful that assuming

the therapies will have this life extending effect, we will be, I think, unable to resist their introduction.

So it's going, I think, to happen gradually. What else should we worry about? Well, one thing we may have to consider is the effect of immortalizing therapies on human reproduction. I have suggested so far that fears of a population explosion are exaggerated. But if worst fears about the effect on population are realized, there are a number of strategies that we may have to consider - in other words, if there was a population explosion, which I think probably is unlikely, but who knows? But if it did happen, what strategies might we consider? Well, one might be imposing a very large immortality tax. Payable, assuming they could afford it, by those who would access life extending therapies. Another might be to deny those who avail themselves of life extending therapies the entitlement to reproduce or the entitlement to have more than one child. Or more than two children. Of course, if you are treating with immortalizing therapies people already past child bearing age, that might not be a very desirable strategy. But as the therapies become more effective, and one is more inclined to do them for our children rather than for ourselves and modify embryos so that they will live indefinitely, then it may be that one of the penalties we may wish to impose is denial of the right of those embryos to reproduce or to reproduce more than moderately.

One possible scenario for this is brilliantly described by Tom Kirkwood who is a worker in researcher in aging in the book he wrote called "The Time of our Lives". In which he imagines a future society which has got immortalizing therapies, and on the birth of a second child, the immortals have to give up their immortality. And they – a trigger in their genes is switched so that process of dying is started, and it will happen at some random point within ten years from the time they have their second child. Unfortunate for the second child, but there you go.

But one other thing we might face, of course, is whether or not we need any future people. Ask yourself this question – is it morally speaking better or worse, is there a moral difference between a future for humankind that contains x billion people, replaced by another x billion people and then again by another x billion people. Which is roughly what we have at the moment, of course, except that the 'x's' are increasing in volume each time. Is that better or worse than a future that will contain the same x billion people just living forever. In other words, if the world contains the same number of people – imagine two possible worlds, one which contains x billion followed by x billion followed by x billion. The other which just contains x billion living forever. Do we have a sense as to which is the better or the worst world. Now, this

is quite interesting, because it raises a very important question in resource allocation issues, and that question is whether what matters morally is lives or life years. What matters, for example, in a hospital like this, does it matter which should you be doing? Should you be trying to produce more life years, as a result of your interventions, or should you be trying to save lives even if you can't save them for very long. Up to now, the dominant model has been the idea that we should produce more life years and the effectiveness of a therapy is usually measured in the life years after treatment, produced by that therapy. But the life years model implies that it doesn't matter how many people you've got, what matters is how many life years the world contains, and if that model is right, then x billion people living forever, is as good as x billion people followed by x billion people followed by x billion. Because the number of life years the world contains is the same in each scenario. It makes no difference. Of course, other people think that it does matter very crucially. Other people think and perhaps you are one of them, I certainly am, that there is some reason to have new people. I think the reasons are very obvious, but I'll just mention them. One of course, is for the pleasures of having and rearing children which most people regard as considerable. The other, of course, is because of the belief that we have that new people have new ideas and that x billion people living forever would gradually run out of ideas. Now that's just a speculation. It might not be, they might be as good as renewing ideas as they are good at renewing life years. So if we think that new people are important, and if and these are big ifs, and if one of the consequences of life extending therapies is that we will either have to reduce people's entitlement to have children, or indeed, to set a particular arbitrary limit to life expectancy. This would be the same as if you like introducing what is sometimes called "the fair innings" argument, that we decide what a lifespan is, three score and ten, whatever you like, we try to help people live that long, and then after that, they lose their entitlement to life. After they have lived a fair innings, they no longer get therapies if they help, they have to make way. Now, we might want to set that up for three score and ten, which is the present one, we might want to set it up 200 and three score and ten, but if we think it's important that there be new people, we might have to decide collectively what an appropriate lifespan would be. Now that would be a momentous thing for us to do. Because it would involve the deliberate ending of life at a particular point, something against which almost all societies have turned their face thus far. But if life extending therapies are successful, and if they lead to overpopulation, we might have to consider that.

Now one way we might do it, if technology permitted, was when we switched off the aging process in the cells, let us say, of an embryo, we program them to switch on again after a

particular life span, whether it was three score and ten, or two hundred, whatever we thought was appropriate. We would switch off the aging until that point, and then program it to switch on again, if we could do that. Now of course, you might say well that's just what we have at the moment, and that's what we've got. That's what our life expectancy at the moment is. It is cells give up at a certain point, after a certain life span. The difference might be though that somebody with immortality switched on for a given period would be healthy throughout that period. They wouldn't have to run the genetic lottery that you and I have to run. They would be pretty much guaranteed immunity to a whole range of illnesses. And would live their fair innings whatever we determined it to be, in good health. And that might make even the switching, the automatic switching off of one's life after a particular life span more rather than less palatable.

Let me turn in the closing section of my remarks to the question that I have been avoiding up to now. Is longevity a good? Would it be a good thing to live two hundred years, three hundred years, rather than seventy to a hundred. Would it be good to live forever? How many people here – I'll start first – how many people here would like to live forever? I mean, usually I'm in the minority, and I'm very pleased to see that – how many people would not like any improvement upon their current life expectancy? And how many would like a modest improvement? Very interesting. So most people would like some improvement, few are completely content with their life expectancy as it is even if they know what it is. Is longevity a good? Well, you see, I think that it would be great fun to live forever – I can't imagine getting bored or tired. But if I did, of course, because I would still be vulnerable, even though immortal, I could opt out at any time. But it's one thing to contemplate immortality for ourselves, or life extension for ourselves as individuals, quite another to contemplate it for whole societies or indeed for the world. Ultimately, it seems to me to come down to this. Either life extending therapies are a form of life saving, or they are not. Now, we talk about life saving. We talk about saving a life. But what we really mean it postponing death. Life saving is, at the moment, just postponing death. You save a life at time T, that life will end at time T 2, or 3 or 20. Or whatever it happens to be. So life saving is just death postponing. If we believe in life saving, we believe in death postponing. If we believe in postponing death, why do we only believe only in postponing death for a particular period. But not always. It seems to me that the whole idea of preserving life, saving life, which is at the center of our collective morality, commits us willy-nilly, to life extension. Because it commits us to postponing death. It seems to me that we would need a much bigger revolution in our morality, and in our way of thinking to change our

minds about that than we would to introduce life extending therapies. It's not necessarily impossible. But it would involve a radical re-think. It would make us take a very different view about the value of life and the importance of preserving it. It would make us think about lives in a quite different way. Now maybe we should start thinking about that. I don't have a settled view about that, but I'm trying to point out just how radical a change in our whole system of morality the possibility of dramatic life extension might involve.

Suppose, for example, life extension happened rarely but by accident. Suppose someone, as in the Douglas Adams story, was made immortal by accident, so that they would live probably forever. Could, would it be legitimate to end the life of the beneficiary of that accident at some arbitrary point, because we thought it was inappropriate or we thought that it was unfair. It seems to me we would be very reluctant to do that. It seems to me it would be rather like the ways in which we all try to extend our lives at the moment. Whether it's the lives of our children, the health of our children by taking folic acid during pregnancy, and avoiding alcohol, or by looking after our health, or by taking exercise, or by trotting around as I will do from today onwards, with one of these to make sure I get my 10,000 steps in each day. We're all into taking what might be unfair advantage on others. Unfair because not everybody could afford one of these, I can afford one because I was given one for free. But I have no idea what it costs, but it would seem that it was way beyond my personal budget.

Let me end, I think, yes – I think – can I take about three or four more minutes. (Sure). I actually want to end by actually looking at some of the arguments that have been produced in favor of death, and in favor of death roughly when it occurs now. And I'm going to take as my stalking horse – and this is the last section of my talk so you'll very soon be able to pin me to the wall – I'm going to take as my stalking horse Leon Kass, who some of you will know was recently appointed by George W. to head up his new President's Council on Bioethics. So I suppose he is a very influential figure in the United States, and Kass has written about the virtues of dying. And he's produced arguments against life-extension. And I want to just look at the four arguments briefly with you that he produces to see how good they are, and if they are terrible, as I believe them to be, to challenge you to produce some better ones. At least those who didn't want any life extension, and not a peep up in the back left hand corner, I seem to remember.

Kass identifies the cool question as the following: Is it really true that longer life for individuals is an unqualified good? And of course, he expects the answer 'no'. And he gives four reasons which I will come onto. But he starts with what can only be described as a metaphysical observation. He says "To argue that human life would be better without death is, I submit, to argue that human life would be better being something other than human. The new immortals, in the decisive sense, would not be like us at all. If this is true, a human choice for bodily immortality would suffer from the deep confusion of choosing to have some great good, only on condition of turning into someone else. In other words, his suggestion is that it would be self-defeating, because if I made myself immortal, I wouldn't be me any more because my essential nature is to be mortal, indeed, human beings are often defined as mortals to distinguish us from gods and other more favored beings. But it seems to me this is just – that there is no deep confusion here as Kass suggests. There is a sense, of course, in which I would be a different person if I was immortal. But it is not enough of a sense to make it irrational or self-defeating for me to want to be immortal. Think of any radical change. Suppose someone had been profoundly disabled from birth, blind, say, or quadriplegic, and suppose a cure for them became available in their mid-forties. If they availed themselves of that cure, they would have a radically different existence – as different probably as mine would be if I were not facing death in the next thirty years. But we don't think they're not them anymore. We don't think it would be incoherent for the blind quadriplegic to choose to be walking and sighted again, simply because that would turn him into a different person. Or take sex change. Take gender change. Gender is a very deep issue of identity. But people do change their gender and they do so hoping that it will make them happier, and hoping that they will feel - they themselves, in person - will feel happier as a result. Now, they may be wrong about whether or not it would make them happier, but they do know who it is who is going to either be as miserable as they were before or rather better for the change. In other words, I think it is just false to think that identity constitutes a good argument. Let me just rattle through the four arguments.

He first – Kass talks about interest and engagement. He says if the human life span were increased, by even twenty years, would the pleasures of life increase proportionately. And these are his examples, and I can't resist sharing them with you. Would professional tennis players really enjoy playing 25% more games of tennis, would Don Juans feel better for having seduced 1,250 women rather than 1,000 women. What would there be to do (this is Kass' last one, it's a gem) what would there be to do for fifteen years after being President of Harvard for a quarter of a century? Well, unlike Kass, I think I can see differences in the degree of reward between say,

enjoying 250 more women and being President of Harvard for twenty five more years. But be that as it may, surely the right answer to Kass is that if more of the same doesn't appeal, there is always the opportunity to choose something different. The great thing about immortality – you are not condemned to go on doing the same thing, I don't have to be a philosophy professor, God forbid for another 150 years I can have a different career. I could be a gerontologist. I could be a – well, I'm not sure I could be anything, but I could be something different. So we don't have to do the same thing. We will maintain our interest.

asking a rhetorical question – he says could life be serious or meaningful without the limit of mortality? And he obviously again expects the answer no. But he has absolutely nothing to offer by way of evidence. He says to number our days is the condition for making them count. And he calls in the psalmist, as authority for this thought. And he then treats us to the biography of a large number of non-existent being, among them Zeus, Hara, Apollo and Athena, who apparently lead or led frivolous lives on account of their fictional immortality. And that's the evidence. Interestingly, Kass does not wax eloquent – he is a very religious man, I am told – he does not wax eloquent upon the frivolity and vacuousness of the existence of the immortal Almighty. Now this may be because God, having an existence quite unlike our own, has an existence necessarily beyond our understanding. And is consequently better at finding meaning in that eternal existence than we are. But it is unclear why this should be so. If limits as Kass suggests are logically required, then it seems to me that God himself or herself, which surely also require those limits. The third argument is an argument about beauty. And here, things, I have to say, go from bad to worse. Kass quotes a very obscure poem by Wallace Stevens in which Stevens says death is the mother of beauty. And he then spends two paragraphs trying to understand, without much success, I have to say, that quotation and he ends up with this thought: 'How deeply could one deathless human love one another? And again, he assumes the answer would be 'not very'. But I imagine a plausible answer might be 'As deeply as any mortal, but with the decidedly romantic advantage that one would love eternally.' Seems to me that's equally plausible. His final argument is about moral excellence. And he makes two points. Virtue and moral excellence, he suggests, require the willingness to give one's time and perhaps one's life for good causes. And the phrase he uses is (quote) "Spending the precious coinage of the time of our lives." (end quote). Well, of course, even if he is right about this, there is nothing to stop immortals giving their time. They've just got more coinage to spend. So if spending the previous coinage of our lives is a good, and we have increased spending power, we can do more good. This is what philanthropy is...this country is built on wonderful philanthropy in which

those who have large fortunes spend more of their precious coinage in doing good. It's an excellent system and I recommend it to Leon Kass.

His final thought, and this is the last one I will share with you this evening, is simply to suggest that "Simply to covet a prolonged lifespan for ourselves is both a sign and a cause of our failure to open ourselves to procreation and to any higher purpose. It is also an expression of a childish and narcissistic wish incompatible with devotion to posterity. It seeks an endless present isolated from anything truly eternal and severed from any true continuity with past and future (end quote)." Well, I suggest to you if there is a sure sign of failure of nerve in argument it is when people start using the words true and truly to qualify their own position. We have already looked at some of the issues concerning the impact of immortality on procreation. I have no doubt that new generations are important and that it is highly desirable the procreation continues, but it is a long way from this to say that everyone must procreate and open themselves to the benefits of procreation in order to have a higher purpose. There will, for the foreseeable future, always be the fresh eyes and minds that both Kass and I believe are important. It doesn't follow of course that everyone must open themselves to procreation. And I am sure that Kass doesn't believe, despite what he says, that those who cannot have children, or those who belong to celibate religious orders, are closed to any higher purpose. I have chosen those arguments. There are one or two others that are extant, I won't bore you with them. But I think the arguments for mortality are singularly unimpressive. Whether we welcome or abhor the idea of immortality, we are, I believe, stuck with it – one way or another, assuming the technology works. I have suggested that we will never have an ethical opportunity to say no, that the arguments for mortality rather than immortality are weak, that the justice arguments are significant, we have to address those, but we don't address them by denying a palpable good to some so long as we can't provide it for all. I believe that the challenge is to try to learn to live creatively with the idea of extended life span, to try to learn to live creatively with the idea of long-lived and shorter-lived people living together, as they do now, it's just that the parameters will be rather larger in the future, and that now is a good time to start thinking creatively about that process. Thank you very much.

(Applause)

Any comments, questions?

(A): (Unintelligible) parents seem to last for ten years.

Dr. Harris: We're talking about adolescence lasting for ten years – God forbid. Yes, I know. My son is just entering that period now, so I am dreading it. We don't know what the effect would be of – let us say we could immortalize an embryo. We don't know whether that would result in a protracted period of growth, as well as protracted life span. I have no idea – my guess is probably not, my guess is that the cells would grow at a normal rate to maturity, but then that they would just keep on growing once mature. But I've no idea. And I don't think anybody else has an idea either. But I suppose if we thought that we were conferring a great blessing on our child, by giving it the opportunity, which of course, it could reject, to live indefinitely and suppose we only give it that opportunity only as an embryo, or indeed modifying the gametes(?) before conception, there would be a one-off change I think many people would go for it, and think they would put up with twenty or thirty years of adolescence if that was the price, of course, they might not live to see the end of it, which would be one advantage of having a mortal parents and immortal children. Am I acting as Chair to myself? Yeah?

(Q): Wouldn't there be an oversupply, or first of all, an undersupply of people who are in the lower ranks of organizations who have to do scut work that they don't mind doing because they are young, they're learning, and a huge oversupply, in the end, of people who are in philosophy?

(A): Well, of course, I have explored some of those – much longer version of this paper and I have explored some of these issues. Um, it depends what social policy we went in for. I mean, it might be just at the moment as actually, you don't have this in the United States, but most countries in the world live with a compulsory retirement age. My compulsory retirement age in my job is 67, I'm not permitted to go on teaching at my university beyond that age. Now in view of the sorts of problems you have suggested, it would be open to societies to say okay, one of the prices we will make people pay for immortality is that the nasty jobs have to be shared around a bit more. And after let us say, I don't know what your job is, but it looks as though you have an agreeable job, you are smiling, after however many years that the agreeable job that you have, you might have to take a turn but knowing that in the end of that turn, you could go back to something more agreeable, and that may be a very just way of coping with that issue.

I hope somebody will ask a question about risk in a moment, because I was going to go on to say – sir?

(Q): I was wondering when you were talking about Kass, one of the issues you have with his argument was that (unintelligible) and you point out this is a kind of fiction. But if I take a look at (unintelligible) is a kind of fiction also. In fact, (unintelligible) as you are, there is a time for

every season, and a change in life. (unintelligible) at least as I see it, do we really have immortality or do we have a type of ??? (End of tape)

(A): Well that's a very interesting question. I think we have to remind ourselves of the very many things that we talk of, as if they were constituent to our lives. We talk about life being a vale of tears, but that doesn't stop us trying to minimize those tears. We talk about suffering being essential to existence, but that doesn't stop us from attempting to minimize suffering. I think we tend to play fast and loose with those things that we think of as a necessary part of life, and we're quite good at selecting between them. But what I'm inviting you to think about is whether it would be rational to select out one other feature that hitherto, we have thought of as natural and normal. Tom Kirkwood, my colleague who used to be my colleague in Manchester, whose book I mentioned earlier, believes actually that mortality is an aberration, it is, so to speak, a mistake that has crept in to human to human physiology, and so far from being natural, it is an error that we could, and possibly should correct. We've speculated this evening about whether that would be a good thing or a bad thing, but I think you may be right, but I invite you and everybody to reflect upon all of the things that we very often talk about as if they were inevitable but it doesn't stop us usually from trying to deal with the ones that we like less. Madam?

(Q): Isn't the bane of your existence fear, and the fear of death? And aren't most religions based on the fear of death and doesn't that cause enormous friction and wars and everything between people and sects of people because of this fear – they invest in fantasy or belief that will control the fear or alleviate it in some way, so that if we got rid of this fear of death, wouldn't there be a more peaceful and loving world to look into?

(A): Oh, I wish. I have no idea. I mean, I have no belief in God and I am very fearful of death which is why I am attracted to immortality. I'm not sure that fear generally is a bad thing, there are a lot of things that we rationally fear. Like ignorance, and poor arguments of the sort that Leon Kass produces. But - so I'm not totally against fear either. I would perhaps be very sympathetic about what you say but I've no idea whether it is true or not. The lady just behind you...yeah?

(Q) Today in the Science Times in the NYTimes, there is an article on salamanders, they reach their age and they reproduce and then they grow up, is that how other xxx longevity and research, do you think?.

(A) Yes, well some of the research has actually tried to reproduce those sorts of effects, I don't know whether it will be quite like that, with us, but it would be such fun. So...

(Q) If advanced extreme mortality xxxxxxxx how do you see it affecting the global concept of God and we – is there a way to feel bad with how we view the eventual end of life and what comes after that?

(A) I have no idea , I mean it relates to the lady's remarks just a moment ago. I don't know whether we like the idea of God because we see it as an immortalizing strategy, we see the afterlife as an immortalizing strategy. It's interesting to me, and perhaps it sounds rather cynical, that even though those who devoutly believe in the afterlife, do tend to try to put off experiencing it as long as the rest of us do. Whether this is a unreasonably unfair remark, I leave it to you to judge. That might indicate that people might hope rather than believe in an afterlife. I'm not sure that I fancy an afterlife that was managed by an all-powerful being whose motives I have very little access to. I think I'd rather go for 'do it yourself' to be honest, but everyone to their own choice. Yeah? Sir?

(Q) Two and a half years ago, in the New England Journal xxxx Callahan published an article where he suggested that we pour our resources into society and give us the best possible quality of life for the first 65 years, after that you're kind of on your own – for transplants and whatever else.. Rather than compare your system to Kass or with Callahan.

(A) Yes I'm familiar with that article. I 'm not for quite complicated reasons attracted to the fair innings argument, and the reason is this...what's fair about a fair innings, why does Callahan pick 65 or 70 years, or whatever it was, he says okay, we should help everybody to live that long, but then not help them any further until everybody else has been helped to live that long. The problem is that what is fair about a fair innings, or what is unfair about an unfair innings is that somebody else is living longer than you so that it is just as unfair if you live to your 65 and I don't and it's just as unfair if when both of us live to 65 you go on longer than I do. So that if what we're really worried about is eradicating the relative deprivation involved in some people living more than others, it seems irrational to pick an arbitrary end point, it's always unfair and that unfairness is endemic and we don't get over that by assessing an arbitrary upper limit. The other thing that seems to be unattractive about the unfair innings argument is that people are not conspicuous in wanting to live less once they've reached a fair innings. But most people who have lived to 65 or 70 still want to go on living and arguably, though I would need much more time than I have this evening to try to make this argument plausible, what I feel is the right approach is something like this: that each of us in this room and there's a big age spread in this room, each of us has something that we probably all care about a lot. It's called the rest of our lives. If we're lucky most of us don't know how long that will be. It may be a short span, or

may be a long span, but we probably all want to experience the rest of our lives and we all want the rest of our lives to be as long as possible, and we want that at whatever stage we are – whether we're two or 72, two, no, because we don't have thoughts about it. Four or 74 and my own view, which I would need a long time to defend, is that when we value life, we value people's desire to go on living and that what respect for life means is helping those who want to live to live, and the corollary of that of course is helping those who want to die, to die. In other words, our moral obligation to me is to take people's – the values of people's lives at their own estimation of it and try to respect that as much as possible, but I couldn't possibly make that very plausible in the brief time. Sir...

(Q) I have two questions – the first one is (unintelligible) – on evolution. (Unintelligible).

(A) Well, most people think that evolution no longer exists for human beings because most people live beyond child bearing age, most people do, and evolution only gets a grip if an evolutionary advantage is that some people reproduce and their genes become part of the gene pool, and those who don't reproduce die out. So most evolutionary biologists think that evolution in terms of Darwinian evolution has stopped already. If we think that evolution is valuable, the only thing left is for us to take evolution into our own hands and deliberately change the gene pool by inserting perhaps new and unprecedented genes that we might manufacture or tinkering with the genes that we already have. Now, whether that's a rational procedure depends upon how confident we can be that the interventions we might make in the human genome would have the effect that we believed they would have. I don't know how confident we can be about that, but if – I'm far from convinced that evolution, as we have understood it thus far, is very desirable. We've evolved, some of us have evolved successfully, some of us have evolved very unsuccessfully. What we would like is for more people to have genomes that do not involve genetic diseases that will prematurely kill them or cause them suffering. Evolution is a very mixed blessing. I myself believe that if we could be confident as to the effects it would be rational and sensible for us to start taking the future course of evolution into our own hands. But we need to be reasonably confident that we knew how to do that. Before I give you a second crack at the whip, I think there was another question over here. Yes, the lady over here.

(Q) With all these people living to a great age, aren't there going to be a lot of people with Alzheimers? I think what I've been hearing from visiting over 160 60 year old ladies in nursing homes xxxxxx. Aren't there going to be big numbers of people with Alzheimers and not as many younger people to take care of them.

(A) Well, I hope not. I don't know the answer to that question. But the supposition is that we would not be immortalizing individuals with all of their problems. That part of the effect of the therapies that would be used would be to enable tissue like brain tissue that is problematic in Alzheimer's to regenerate itself. I agree with you that if that was not the effect, there would be very little point in doing it.

(Q) You didn't answer a part of my question – do you mind if I ask you a follow-up.

(A) I don't mind as long as you don't necessarily expect me to answer. But go on. I probably avoided it because I couldn't answer it.

(Q) That's what I was asking. Wouldn't there be by this time a virus system xxx with wisdom and knowledge, isn't there a sort of limit to the appetite of any human being, however curious and intellectually provoked has in accumulating knowledge or traversing knowledge, and in the end you are so exhausted, you are interested in xxxxx – do people show signs of that as they grow much older? That the mind doesn't really stay that interested in different fields after a long while of looking, wouldn't you run out of things to think about?

(A) I don't believe that I would run out of interesting things, but if you did, I have no objection to that and because of your vulnerability, if you decided that you really had run out of anything that made life worth going on, even if you had been immortalized, you would be able to end your life, and presumably, that's what you would want to do. But I suspect that you'd find different sorts – I'm sure you'd run out of wanting to be a bio-ethicist and a philosopher, God knows, I'm sure I will. But there are lots of other things that I'd like to do, and I would love to have world enough and time to do them. Yeah, I would give – I'm due to retire in another ten years, and I think that would about do it as a bio-ethicist. I'd like – seeing I'm going to have a long retirement, I'd like to turn my hand to something else after that.

(Q) One of the possibilities you discussed about mortals living together with immortals. And in that kind of society, based on a man's time xxxxxx it gives me great pause and trepidation and I couldn't envision a society of masters and slaves – maybe by that time we would have one group of people who could live forever and the other people who are due to have a mortal life span.

(A) But who would be the masters? I betcha, betcha it was the non-immortals, it would be the mortals who would be the masters, because, of course, it would be much more valuable to have a slave that you wouldn't have to replace than the other way about. That might be a great comfort, that might be a great comfort. But the non-facetious answer to your question is that if we worry about slavery, or indeed any other example of human beastliness, we don't need immortality to provoke us to guard against it. We already have powerful enough reasons for opposing such things and I don't believe that mortality rather than immortality or vice versa would make a difference to that. Our vigilance against wickedness seems to me to be quite independent of these sorts of arguments. Nothing I have said, I hope, should encourage us to be less vigilant. Lady? Last question?

(Q) Isn't it a fact that if you don't believe there is a God, we believe that we are all xxxx inter-related to the universe.

(A) Well, I don't know about to the universe, but you and I, madam, share 99.9 percent of our genes, and I've never met you before. If you have a daughter, you share 99.95% of your genes with her, so everybody in this room is hugely inter-related in a very, very massive and perhaps worrying way, but as to the rest of the universe, I have no idea.

(Q) What role does body, mind, spirit play in all of this?

(A) I have no idea, I have no idea. I haven't – I do know something about the structure of my cells. I know that there is not a spiritual cell in my body. So I really don't know the answer to your question. I haven't an ounce of spirituality, I'm pleased to say.

Dr. Butler: I think that Professor Harris has demonstrated the kind of daring that we require of philosophers, and some of you will remember Socrates who constantly went around Athens asking people 'what do you mean by this?' And the ultimate fate, of course, was hemlock.

(Dr. Harris) Thank you very much.

(Dr. Butler) And we do ask our philosophers to stretch our minds and to ask us to think about things that they either have not thought about, or might even regard as unthinkable. Reminds me of an evening that I spent with a very famous think-tank leader, who wrote a famous book on the

unthinkable – namely, would we ever utilize nuclear explosions – and I think we do need to think about the prospect of longevity. Imagine now if this was the evening of September 24, 1900, and the average life expectancy in our country and in the industrialized world was less than 50 years. And in the rest of the world was less than 30 years. And a philosopher came to discuss the impact of what it would mean to discover antibiotics, to utilize vaccines, to utilize anti-hypertensive medicines, that might even, by the end of that century, in the year 2000, people might start talking about regenerative medicine, and a new kind of salamander. Or a gene based medicine. And we might have had a similar discussion as to whether we can “afford” to have all these fifty year olds running around, whether we can afford to have people having time on their hands to think about things, or whatever it might be. So it seems to me that we always need to look at the marvelous historic transitions and the historic transition of the 20<sup>th</sup> century was a radical change, a gain of over 30 years of life, and with regenerative medicine, and genomics, we might have something comparable, in this the 21<sup>st</sup> Century. And were that to happen, we need to be thinking about the kinds of questions of a moral character, because your interest has been so much in terms of human justice and making us think about the different aspects of what it means to have a just society. With a very different kind of world, with a very different kind of cycle of life, and length of life so it’s in that context that I would really like to thank our professor, our philosopher, for the evening, for giving us much to think about, and if you move into the next room, you have something to bite on to add to that process of thinking, and I want again to thank you very much for this extraordinarily interesting and brave discussion. (Applause).