"Conspicuous Metabolism:
Life Support and Life Extension as Luxury Goods"

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The New Realities and Controversies of Dying in America

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CONSPICUOUS METABOLISM:
LIFE SUPPORT AND LIFE EXTENSION AS LUXURY GOODS

Abstract

The seemingly science-fictional achievement of extreme life extension through medical technology is now held to be plausible, if not probable. However, the enabling technologies will likely remain unaffordable for the vast majority of the world's population. This renders life-support and life-extension technology a luxury good. Thereby, life itself becomes a luxury good. This leads to a first conclusion: *continued development of life-support and life-extension technology will replicate, if not exacerbate, existing social divisions arising from inequalities of economic privilege and access to medical technology, by creating conditions in which not just healthcare technology, but extended multiples of the human lifespan, function as luxury goods on a free market.* A luxury market in such technologies will have radically transformative social impact. How much so is expressed in a second conclusion: *the availability of life-extension technology raises the possibility that medical technologies acting under market forces may bifurcate society into functionally distinct biomedical classes with ineffably different expectations, opportunities, and experiences.* This framing leads to a third conclusion: *the ethics of the development and implementation of life-support and life-extension technology are only incidentally issues for applied bioethics, but should instead be viewed as a question of social priorities and class dynamics with implications for the stability of the human species as a cohesive biological and social entity.* Therefore, finally: *issues related to extreme life-extension technology must be understood from a perspective of species-level interests (similar to global warming or nuclear war), not from a social, professional-ethical, or individualized perspective.*

CONSPICUOUS METABOLISM:
LIFE SUPPORT AND LIFE EXTENSION AS LUXURY GOODS

Introduction

Life is not what it used to be, or, rather, lifespan is not what it used to be for those who can claim the benefits of the pills and potions that, increasingly, stave off the postmortems medical care once universally promised. (An old surgeons' taunt of medical practitioners was that they had nothing to offer but "pills, prayers, promises, and post-mortems". Surgeons in turn, of course, were said to "bury their mistakes". Pathologists rounded out the internecine slagging: they "know everything and do everything, but too late". If the wilder prophecies of medical futurists hold good, all three of these descriptions may become false by obsolescence.)

The seemingly science-fictional goal of extreme life extension through medical technology has now become common currency. There is, in some quarters, a confident expectation that the extension of the average healthy human lifespan on the order of decades, if not more, is a plausible, or even probable, development in the very near future.

Technology is becoming available that hints at the potential for such great increases in life expectancy. Existing life-support technology and treatments for what would otherwise have been terminal diseases have had a dramatic impact on the duration and quality of the end-years of life. More ambitious is current research on what is often referred to as "life-extension" technology, intended to revise our expectations of lifespan not on the order of a few years or a few decades, but possibly on the order of multiples of the current average human lifespan or even more.

Those technologies are already having a significant impact on what we understand to be the course of our lives, and on what we can expect in terms of our average lifespan now and in generations to come, at least for those privileged to enjoy the healthcare benefits available in affluent societies. Today, sophisticated life-support technology, bringing extension of what would previously have been a short expectation of remaining life in the case of terminal diseases, is commonplace, and the average human lifespan, from beginning to end, has more than doubled since the 18th century.[1]

How much further this delay of the inevitable can be pushed is still an unanswered question, but the fact that lifespan can be extended by the application of healthcare resources, to some degree at least, has already been established, and there is no reason to think continued progress in that direction is impossible.

How long one lives, or may live in the future, is thus determined not entirely by the merely physiological arc of one's bodily existence, but by one's degree of access to the medical technologies that take over and determine the path of life. As those technologies become more potent, and their effects more extensive, the difference in outcomes for those who do or do not have access to them will become more dramatic.

In this chapter I argue that the development of technologies of extreme life extension will be of such import for humanity as a whole they must be regarded, and treated for policy purposes, in a manner entirely unlike that of almost any other medical technology. Because of the economic and social patterns surrounding the introduction of certain types of technologies, including those considered here, these developments, to the extent they become real, will present

moral and practical challenges of global significance, to which moral reasoning must respond with concepts and values of global scope.

[Descriptive material omitted.]

Increased Lifespan: How Realistic?

Though the entire concept of life extension, or radically extended life support, may seem fantastical, there is enough serious and active interest in such projects to justify giving some attention to their potential consequences.

Medical Technology: Availability, Access, and Distribution

The impact of the kinds of technologies considered here on aging, senescence, lifespan, and the other biological desiderata of mortality, inevitably fascinates (possibly appalls). But, in a way perhaps not at first obvious, the non-medical details of their implementation will turn out to be the most significant. Although the changes potentially to be wrought in the very scope and substance of a human life are dizzying to imagine, it is not the absolute impact of those changes – however significant they may be – that is at issue here.[13] The greatest impact on society at large will come from *inequalities of access* to such technologies, not their mere function.

A society with an average age at death of 300 years will have a different pace and flavor, but not necessarily greater social conflicts, than one with an average lifespan of 75 years (assuming similar standard deviations, among other things). But one in which only some people live for 300 years and others cannot expect much more than 75 will be faced with conflicts of an unprecedented kind.

That is to say, it is the expectation of inequality, in regard of this particular, revolutionary technology that elevates issues associated with life extension to the level of significance argued for them here. That expectation is not a welcome one, but it cannot be dismissed, for reasons addressed below.

Dr. Jerry Nessel has criticized the "chauvinistic proposition" that "technology is only for the rich and chosen" – something he denies, citing the history of technological development.[14] This paper implicitly endorses the chauvinistic proposition – technology *is in fact* for the rich and chosen – not as a preferred policy but as a descriptive observation that must be grappled with, especially in the case of technologies of such awesome and pervasive force.

Class Privilege and Medical Technology

It is already well documented that economic class and access to economic resources, especially healthcare resources, are considerable determinants of life expectancy and the health-related outcomes of life. That will remain true as technology progresses.

However good our medical technology becomes, even if it extends beyond current capabilities of near-death life support to the point of actual life extension, taking advantage of those benefits will require access to the resources that make them possible. Inevitably, access to those resources will be, just as it is now, determined by economic class or by status within a society affluent enough to make those resources available to some of its citizens.

Life-support technology is today available largely in First World countries, but not to all their citizens, and largely unavailable in Third World countries. *Life-extension* technology is currently not available at all, but there is no question that if it becomes available it will be, in the beginning at least, concentrated in the more affluent countries, and the question of who within

those countries has access to those technologies is a significant one as well. That is guaranteed by the economic process of advanced-technology development, which requires resources only the most affluent societies possess and the products of which are then deployed for the benefit of those citizens or corporate stakeholders controlling the inventions.

Distribution of Life Support/Extension is Inevitably Market-Based

Access to medical technology, including life support, is essentially market-based. Even in those countries with universal healthcare coverage, limits are inevitably placed on what kinds of technological resources are available. As Erica Borgstrom notes, citizens cannot demand unlimited life-support technology under ordinary healthcare coverage plans, even in countries guaranteeing access to healthcare for their citizens.[15] In the United States, which offers no such guarantee, access is a function of one's ability to afford sufficient health insurance, or to pay out of pocket. Thus, whether in a universal-access or free-market system, the (global or individualized) cost of healthcare services determines the level of access individual patients enjoy. Healthcare is thus inevitably a market-based good, even in single-payer systems.

Beyond this, though, there is an essentially unregulated market in healthcare above the levels of the typical or universal basic coverage plans. Whatever basic minimum of healthcare resources is guaranteed (if any), in most cases patients can buy care above that level, the limit to which is determined primarily by their private resources. The implication of this is that, since life-support and life-extension technologies are market-based goods, the benefits they offer are market-based goods.

Since Life Support/Extension is a Market Commodity, Life is a Market Commodity

The benefits they offer are added years of life. It is currently possible to buy access to the life-support technology which extends life in the dying years, and when it becomes available it will be possible to buy access to the life-extension technology which gives a greater expectation of total lifespan. Buying access to such technology buys the added years of life the technology provides.

You can buy life.

This is even more literally true when it is remembered that the technology in question – life extension – purports to extend human lifespan by multiples of its current average length, possibly into the hundreds of years. That is the equivalent of living multiple periods of time equal to one current lifespan – in essence living multiple *extra lives* after one's expected lifespan (in today's terms) has run out.

Life, or bonus years of life, or in fact extra lives, in addition to, or in comparison to, those afforded by an unmodified and only modestly technologized lifespan such as most people live today, is thus a market commodity. But it is a market commodity heavily dependent on advanced technologies still in development, which, as argued above, will almost undoubtedly be more expensive and less widely available than those medical technologies taken as commonplace today.

This purchased life will be available, or at least increased years of life will be available, only to those who can afford them. In other words, added years of life are essentially luxury goods.

Luxury Goods

"Luxury goods" is a term of art in economics. It refers to certain types of things available for sale in the marketplace that are distinct from other types of things.

Life as a Luxury Good

The central conceit of this paper is that the added years of life that can be purchased through healthcare technology, either by means of life support or life extension, are a luxury good. That fact has moral and social implications greater, and more worrisome, than it may at first appear, and elucidating and responding to those concerns will be the burden of the rest of the discussion.

[Descriptive material omitted.]

Healthcare as a Luxury Good

By the kinds of definitions discussed above, healthcare goods function on the open market as economic luxury goods. We see how much money affluent people willingly spend for spas and plastic surgery and exotic treatments. And it is well documented that the most affluent societies spend, annually, over $2,000 per person on healthcare at this time, while many of the least-developed countries spend amounts measured in one or two digits.[19] At both the individual and societal levels these demand curves rise with income (or GDP) and thus define a luxury in the technical sense, however necessary healthcare would seem to be. (This becomes somewhat complicated: the curve of demand versus income doesn't rise indefinitely for healthcare; it levels off somewhat at a point beyond which there is limited benefit from continued expenditure. But it

remains true that the affluent spend much more on healthcare than the non-affluent do, and when comparing societies rather than individuals this difference becomes stark.)

Added years of life are also obviously luxury goods of the inherent-quality type – almost everyone wants added years of life, regardless of cost. Empirical evidence is found in the common observation that vast amounts of healthcare expenditures are concentrated in the final years of life or the final months of treatment for terminal illnesses, with greater expenditures by those of greater wealth for the acquisition of healthcare services beyond the basic level more widely available to all.[20]

In addition, as will be touched on below, the consequences of life extension likely include a social-status-setting function that will be central to the moral issues associated with that technology. It is the self-perpetuating dynamic of social-status luxury goods, in particular, that is of special significance in this regard.

[Material omitted.]

Futurism: Utopian and Scientific

Invariably, issues regarding life-extension technology, and even life-support technology to some extent, are addressed at a global level: "what will happen when we all live to 300 years?" In many discussions, there is an implicit assumption that when these kinds of technologies become available, or in the case of life support as they become more available, they will be available to everybody – the future will be one in which everyone will live to be 300 years old regardless of income, economic status, or the mechanisms of production and

distribution of the relevant technology. This Utopian expectation of untrammeled access to such new technologies is wildly unrealistic.[22]

Technology Development and Equality of Access

No technology is introduced without regard to the market-based forces driving technology through society. Taking as an example the personal computer, becoming widely available in the early 1980s, it remains true over 30 years later, even in affluent societies, that some people have access to computer technology and some people don't, even though it has become quite cheap in current-dollar terms.

The idea that extremely technology-intensive healthcare goods with dramatic societal impact will be made universally available without regard to cost, is, for the foreseeable future at least, simply false. Even if life-support technology were to become as cheap as computers today, it would not be universally available, as the example of computers themselves tells us.

Only a program of universal access by way of massive subsidy would reduce such technologies to the level of ordinary goods rather than luxuries. And here, the self-perpetuating nature of social-status luxuries takes on particularly malevolent significance. For economic reasons alone (the technology, in its early phases at least, is likely to be limited in availability and highly expensive), a policy of universal subsidy will be opposed by powerful social forces. And the powerful classes that derive social privilege from access to such technology – in ways discussed below – will have no incentive to see that privilege diluted. Life-extension technology as a luxury good will thus remain a luxury good, available to the affluent classes, providing benefits only certain people can access, and making a distinction between classes on the basis of that access, for the foreseeable future.

From the description of technology, biology, and economic privilege given above, we are led to a preliminary conclusion pointing toward the general concern motivating this paper:

> ***First conclusion:*** *continued development of life-support and life-extension technology will replicate, if not exacerbate, existing social divisions arising from inequalities of economic privilege and access to medical technology, by creating conditions in which not just healthcare technology, but extended multiples of the human lifespan, function as luxury goods on a free market.*

Social Implications of Life Support and Life Extension

Before proceeding to a consideration of the moral implications of putting life in the same economic category as Italian leather handbags, the human impact of the development of these still-imaginary technologies, and of their irregular and limited distribution through luxury channels, ought to be introduced. A brief consideration of the types of consequence that may be foreseen will be enough.

Economic Impact of Life Support

Among the most obvious consequences of introducing technologies that push death further off are the ways in which doing so would alter the balance of economic forces defining and organizing life today. With a potential working life of hundreds of years, the privileged few who are in a position to choose such a future for themselves will have economic opportunities that are not just hard to reach, but unreachable, for others.

[Economic discussion omitted.]

Social Impact of Life Extension

Concomitant with the economic disruptions these changes in lifespan would bring are the changes in social patterns and practices depending, vitally but often invisibly, on what we currently understand our lives to be like. In a society in which human reproductive age is (presumably) unchanged, but average age at death has been pushed back hundreds of years, relations within life-extended families will be altered in ways that have never been seen or experienced. Successive generations, each born twenty-five years after their parents, will know not, at most, four grandparents, but eight great-grandparents, sixteen great-great-grandparents, and exponentially more even unto the 8^{th}, 12^{th}, or further generations.

For dynastic families of this type, family relations will take on a different aspect. Intrafamilial resources and assistance will flow down as water. Children may come to feel they are more peers than juniors to their own parents – separated from them in age by only a few decades, in a life extending through centuries. Lifelong marriage may come to seem unrealistic, and new forms of blended families be developed. "Family," and what it means to be a member of a family, will take on a new meaning that cannot now be guessed, but can neither be denied.

Life Extension and Class

In these ways, the existence of luxury goods conveying actual years of life would create a class division of a uniquely stark and unbridgeable nature. Those with access to the technology of seeming-immortality would live lives so different from, and so extensive beyond, the lifespans and life patterns of those lacking access that they would form in essence a *biological class* – a social subset defined by biological barriers others could not cross for reasons that were at bottom economic but which cashed out in terms of the embodied experience of life itself.

With truly revolutionary technologies – life extension on an order of multiples of the current average lifespan – the lives of those privileged to access it would be simply indescribable in terms of what we now understand as a human life and its component ages and experiences. What is "middle age" if you live 300 years? What does it imply to plan for your third decades-long career, or the birth of your great-great-great-great-great-great-grandchild, and what do you have in common with those who have just one chance to see their plans and goals through, and may not be sure they will ever see even their first grandchild? How can you be friends with another supposedly mature and experienced adult who is 200 years younger than you, and will die 100 years sooner?

It seems impossible that members of the long-lived population would be likely to marry, form friendships, or even collaborate on projects with those whose lifespans are incongruent with theirs by a matter of hundreds of years. They would cleave to their own and – especially as they consolidated their economic power and privilege – drift into a way of life defined by biological and social patterns simply impenetrable by the short-lived, regardless of will or inclination on either side of the barrier. Such lives would be, in practical effect if not (at first) strict biological fact, those of a completely separate species.

This is a new form of class distinction – the creation of social classes defined in biological terms – which arises from the function of these technologies as luxury goods available only to the affluent in a market-based healthcare distribution system, and from the likely consequences of such goods in the lives of those who do and do not have access to them.

Those consequences parallel, but would have vastly more pervasive and insidiously influential effects as, existing class distinctions arising in the healthcare arena, such as unequal

access to expensive treatments or intensive-care technology. While those inequalities may have significant impact in the lives of the privileged and non-privileged, today's technology does not offer added decades, let alone multiple lifespans, of healthy life.

The advent of biological class distinctions of that magnitude would be not just another example of economic inequality as it is currently known, but the beginning of the division of the species itself into incompatible populations living unrecognizably different lives. Those lives would be, in the one case, defined by their enjoyment of biological luxury goods acquired through an open (but not equally accessible) market that are the equivalent of actually renewed or multiplied human lifespans, and in the other by the denial of such access and opportunity.

[Discussion omitted.]

The scope and significance of such consequences in the lives of those who embrace this technology – as well as those who cannot – pushes us another step toward a conclusive appreciation of the impact of the technology in question:

> ***Second conclusion:*** *the availability of life extension technology raises the possibility that medical technologies acting under market forces may bifurcate society into functionally distinct <u>biomedical classes</u> with ineffably different expectations, opportunities, and experiences in living.*

Is the Advent of Biological Class a Significant Moral Issue?

Although this second conclusion is unmistakably dramatic, it may be overstated. Before concluding – as will be considered below – that the rise of "biological classes" will have some unique moral import, it must be considered whether this is different from, or worse than, the

consequences of class divisions as they are felt today, including in regard to access to biomedical technologies.

Class Inequality as Such is Not the Central Moral Issue

Luxuries as such are not objectionable. In a society that does not demand absolute equality of wealth or circumstance – as few or none today do – there will be those who have more of what is desirable than do others. If inequality does not arise from circumstances or economic forces that are themselves objectionable (in every case a complicated question), and does not entail the denial of actual necessities to some in the provision of luxuries to others, the existence of such class distinctions, and the distribution of luxuries they make possible, does not by itself demand intervention.

[Discussion omitted.]

The claim that the inequalities of health and life contemplated in this paper do in fact rise to a level far more severe, and objectionable, than the already-existing health-related class distinctions of today, must be demonstrated before any further conclusions about them can be reached.

Revolutionary Healthcare Luxuries Not Only Reflect, But Impose, Inequalities

For the reasons given above, today's healthcare inequalities do not and cannot create new classes or functional taxonomies of the human species. And if the current fitful but real global leveling trend toward greater economic prosperity and access to technological benefits continues, those existing inequalities should diminish, not increase. But extreme life extension would give its beneficiaries lives so removed from the pace and content of those we live today that that

privileged class would constitute its own biological community, ineluctably divergent from the community of the mortality-poor it had sprung from.

This analysis depends on the expectation that such technologies would in fact be luxury goods – that is, available on the free market, but not guaranteed to all. It seems obvious that would be true at least at first, when such new technologies can be expected to be expensive and dependent upon treatments or equipment that will not immediately be widely available. Beyond that, however, luxury status can have a self-perpetuating quality.

Those who control access to luxury goods may choose to keep them exclusive (as in the case of restrictive housing covenants before the Civil Rights Movement). And the mere indulgence of certain luxuries by those who can afford them may, by itself, have the effect of exaggerating already-existing inequalities of access (as in the case of germ-line genetic engineering, the benefits of which may remain unobtainably expensive for the lower classes, but which, once acquired, would then be inherited naturally by successive generations of the upper class at no further cost).

As a proof-of-concept example, the pattern of healthcare technologies assuming an initial, and then permanent, luxury status has already been seen in the case of in-vitro fertilization (IVF), which is by now a mature technology but remains very expensive and largely restricted to the affluent classes.

When billions of the world's people, and even significant fractions of the populations of affluent societies, still cannot benefit from such commonplace technologies as computers and IVF, decades after their introduction, there is no reason to imagine an exotic and revolutionary

technology such as life extension will remain anything but a very exclusive luxury good long after the affluent classes have begun to employ it.

The Persistence of Biological Class Division is a Moral Issue

Although class inequality may be justifiable in some cases, particularly in the distribution of luxury or non-necessary goods, that conclusion incorporates the assumption that most luxury goods do not mediate vital or otherwise necessary aspects of people's lives. When social luxuries perpetuate inequalities of moral significance (as in the case of racially restrictive housing covenants) those inequalities are less justifiable. When such inequalities produce class divisions of such magnitude as to affect the social functioning of the species itself – and to the systematic detriment of the less affluent or privileged – that moral significance is magnified to an unprecedented degree. The potential for such divisions to become biologically or socially self-reinforcing extends the scope of that problem through ages and generations.

Medical Ethics and the Extended-Life Classes

As was noted, inequalities and class divisions, in regard of healthcare and much else, already exist. There is much that can be said about the advisability of such inequalities and the means of managing them, but that discussion sits within, and is addressed by the tools and concepts of, ordinary economic, political, and philosophical analysis. It may be, however, that those tools and concepts are inadequate to the treatment of the issue at hand, comprehending not merely distinctions within but the actual bifurcation of human society and even the human species itself.

Medical Ethics is Not Capable of Addressing Species-Level Moral Issues

In particular, medical ethics does not seem to have the tools to address society-level impacts of medical technologies, let alone impacts of such magnitude as to actually remake the society in which they arise.

Perhaps in part because most market-oriented societies lack mechanisms for authoritatively setting global social values, and particularly because luxury-goods markets, by their nature, stand outside the distributive mechanisms of the welfare state, global policy-setting regarding equality of access to limited-availability medical luxuries is uncommon. Regulations driven by supposed moral concerns, such as in the cases of abortion or physician-assisted suicide, are relatively common, but questions of scope of access, even in countries guaranteeing a minimal level of healthcare, are typically motivated more by budgetary concerns than by a top-level policy regarding the average lifespan, or types of class relations, or intergenerational dynamics, that have been chosen as explicit broad goals for their societies.

Medical ethics has tended to focus on clinical applications of familiar moral precepts, for the purposes of decisionmaking in individual cases, or policy-setting regarding particular practices. Society-level concerns such as the differential impact of healthcare on women, minorities, and other groups, the potential for healthcare practices to challenge or reinforce social patterns and stereotypes, or the abusive nature of certain practices such as drug testing in the Third World, among many others, have often been raised, but even these are issues of the direct impact of particular policies, not in most cases a push for lofty goals for the entire species. Even the issue of equality of access – central to the argument of this paper, and a recurrent hot topic in medical ethics – is typically addressed as a financial management issue.

Thus, when practices arise portending changed conditions of life for humanity in the most general sense, the recognized tools and perspectives of medical ethics are not expansive enough, nor do they command universal-enough consensus, to encompass the scope and sweep of the issue.

The Moral Issue in Life Extension Arises Fundamentally From Class, Not Medicine

Furthermore, given the class dynamics of the issue of extreme life extension, as described above, even though the technology itself addresses the most fundamental aspects of human biology and human life, it is not, in its employment, distribution, and final consequences, essentially a medical issue. It is rather an issue of indirect social engineering through class-based differences in access to a transformative experience. That experience – the extension of life expectancy for oneself or one's offspring – is biological in nature, since it is its impact on species-level biology that leads to differences in experiences of life having such dramatic consequences. But those consequences – the issue of real moral significance – are ones of social stability, equality, and the future of the human species as such.

> ***Third conclusion:*** *the ethics of the development and implementation of life-support and life-extension technology are only incidentally issues for applied bioethics, but should instead be viewed as a question of social priorities and class dynamics with implications for the stability of the human species as a cohesive biological and social entity.*

The Controlling Moral Perspective

If we create a society in which there are essentially two distinct human species – defined not by their ability to interbreed, but by differences in access to economic resources resulting in

dramatically different lifespans – we will have changed human society in a way that has never been countenanced, and which has to be addressed as a question of species-level significance.

Such questions are few, but they have a defining quality: they cannot be avoided or evaded. Life will change for those who do not or cannot buy extra lives, because those who can have done so. (When the most economically powerful class removes itself to its purchased immortality, how those left behind are regarded and treated will inevitably be different even if they themselves have no truck with the technology in question.) Unlike with simpler luxuries, or even luxuries of healthcare such as are currently available, the advent of transformational luxury goods will change not just the lives of those few who can afford them, but the nature and future of humanity itself, for both its new privileged biological class and the remnant untransformed majority.

In a society divided into two distinct and different biological classes, the lives of both classes must be very different from those lived in a world where such distinctions do not arise. The employment of technologies with such effects is therefore a moral issue that comprehends the future and interests of the entire human species, not merely of those who directly access or make use of that technology.

What Moral Perspective is Available for Issues of Such Magnitude?

There are in fact issues of such scope, other than the fictional one addressed here. Their existence and our understanding of them do not provide solutions to the problem posed by the potential of human life extension, but they at least provide an example of how issues with such expansive moral import have been considered in the past.

Issues of this type are those that threaten species-level harms, imposed on all or almost all individuals regardless of their personal choice to participate in or endorse the technological changes giving rise to them. Most important moral or social issues are not of this type: there are many issues having great significance for a given society or even internationally, and which threaten or oppress individuals without their choice or endorsement, but which do not give rise to transformational impact at the species level. An example might be economic exploitation: many workers lack basic necessities, and some societies are systematically exploited for gain by more powerful others, but, as unjust as that may be, it directly affects only those directly involved, and not by necessity. (Exploitation occurs because some with power choose to abuse vulnerable others; it is not an inevitable feature of work itself.) But there are other issues which embroil all of humanity in dangers which cannot be avoided, as an inevitable consequence of the practice in question. Those are issues of the type this paper contemplates.

Examples of this type may be nuclear war, global warming, or the worst excesses of environmental degradation. In these cases, the introduction or use of certain transformative (*i.e.*, destructive) technologies threatens devastating consequences for everyone who lives on the planet. The powerful elites who make the decisions to use these technologies thereby choose life, death, and a transformed future for everyone else, without their input or agreement.

Because of the potential magnitude of consequences of these decisions, their moral significance can only be addressed from a global perspective. (This explains the particular horror with which anti-nuclear activists regard discussions of the "tactical" or "limited" use of nuclear weapons, perceiving that such use would immediately or eventually escalate to the level of global harm threatened by full-scale nuclear war. Planning for such individual-scale uses without comprehending global consequences is thus a way of ensuring the worst outcome.) In addition,

because of their transformative nature, policy decisions about technologies of this type must be made before they are deployed.

We have not solved the problems posed by the threat of nuclear war, and in the cases of global warming or environmental disaster it may already be too late to avoid even the worst possible consequences. But one legacy of having at least contemplated them is that we now recognize there are such things as global-level moral issues. And we have at least some history of analysis, planning, and even cooperation in addressing them at the global policy level.

Life Extension Technology Must Be Addressed Using the Moral Tools Developed for Other Issues of Global, Species-Level Consequence

Given the transformative potential of extreme life extension technology as a luxury good both defining and creating species-level class distinctions, it must be addressed as equal in significance to other moral issues of global impact such as nuclear war or global warming:

> ***Fourth conclusion:*** *issues related to extreme life extension technology must be understood from a perspective of species-level interests (similar to global warming or nuclear war), not from a social, professional-ethical, or individualized perspective.*

Concluding Remarks

The final conclusion above – that "life extension is very important" – may seem rather weak tea. At the end of a labored argument about healthcare, economics, class, and social dynamics, it offers only a moral categorization, not a proposed solution to the identified problem. But defining the moral scope of a problem, and determining the level of analysis and policy-making at which it must be addressed, are important preliminary steps (and as was noted, problems of this scope are notoriously difficult to bring to practical resolution).

One thing this conclusion does is help to avoid the error of mis-categorizing and minimizing the issues portended by technologies of this type. Life extension and similarly fanciful technological proposals enjoy great popularity with the futurist-minded or transhumanist communities, and others who are fascinated by technology in and of itself. It is tempting to think they are just more-exotic forms of medical technology, to be addressed with the familiar tools of medical ethics and policy-setting. For some cutting-edge medical projects – individual human body enhancement with relatively minor impact on bodily functioning, for instance – that is probably true. In other cases – as I have argued throughout – it is not, but those cases, because they are rare and because their dynamics are both indirect and hard to predict, may be hard to recognize.

Assuming luxury technologies promising transformation at the level of the species can be treated as just another issue of healthcare financing or equality of access could be an oversight analogous to that of humanity's long indifference to global climate change. The problems they threaten may be irreversible before we realize they have occurred. Forewarning ourselves may provide the opportunity to identify and respond to the problem before we make our mistakes.

And, finally, though the discussion herein is focused on the exotic and as-yet-undeveloped technology of life extension, it may make clear the type of analysis that should be employed with other transformative technologies, especially, but not exclusively, in the realm of biology and medicine. That technologies employed at the level of the individual – as biomedical treatments quintessentially are – may have indirect effects that change conditions of life for everyone, even in societies where such technologies are unavailable, is a new possibility and a new way of perceiving the moral issues that technology raises. It necessitates developing the conceptual flexibility to recognize such transformative technologies and employ the breadth of

perception and moral analysis they demand. Acknowledging that need may broaden the scope of this chapter's conclusion, even if it brings it no nearer a solution to the problems addressed.

NOTES

[1] Caleb E. Finch, Eileen M. Crimmins, "Inflammatory exposure and historical changes in human life spans," *Science* 305 (2004): 1736 – 39.

[13] For a detailed consideration of the social impact of life extension, and the ethics of the issues that raises, *cf*. Kevin T. Keith, "Life Extension: Proponents, Opponents, and the Social Impact of the Defeat of Death," in Michael K. Bartalos, MD (ed.), *Speaking of Death: America's New Sense of Mortality*, New York: Praeger Publishing, 2008, pp. 102 – 151

[14] Jerry Thomas Nessel, MD, "Opportunities and Obstacles Towards Postponing Death and Postponing Dying," presented at the Third Austin H. Kutscher Memorial Conference, Columbia University, 24 March, 2012.

[15] Erica Borgstrom, "Ensuring a Good Death – English Policy for and Experiences of End-of-Life Care," presented at the Third Austin H. Kutscher Memorial Conference, Columbia University, 24 March, 2012

[19] http://ucatlas.ucsc.edu/spend.php [accessed 1 October, 2012]

[20] Samuel Marshall, Kathleen M. McGarry, Jonathan S. Skinner, "The Risk of Out-of-Pocket Health Care Expenditure at End of Life," National Bureau of Economic Research Working Paper Number 16170, July 2010

[22] To their credit, the SENS Foundation includes "ensure widespread access" among their goals for the development of life extension technology. But even here, they seem to implicitly assume that can or will be done.