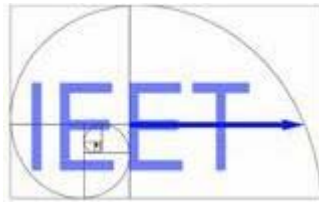


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**Developmental and ethical considerations for biologically
uplifting nonhuman animals**

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ABSTRACT

As the potential for enhancement technologies migrates from the theoretical to the practical, a difficult and important decision will be imposed upon human civilization, namely the issue as to whether or not we are morally obligated to biologically enhance nonhuman animals and integrate them into human and posthuman society. Precedents for intra-species cultural uplift abound in human history, providing both sobering and edifying episodes showcasing the possibilities for the instigated and accelerated advancement of technologically delayed societies. As a number of scientists, philosophers and futurists have recently argued, there is mounting evidence in support of the suggestion that these historical episodes are symptomatic of a larger developmental trend, namely the inexorable and steady advancement of intelligence. Civilizational progress necessarily implies increasing levels of organization and refinement across all realms of activity. Consequently, the status of nonhuman species and the biosphere will eventually come under the purview of guided intelligence rather than autonomous processes. That said, a developmental tendency towards uplift does not imply that it is good or right; more properly, it can be argued that uplift scenarios do in fact carry moral currency. Through the application of Rawlsian moral frameworks, and in consideration of the acknowledgement of legally recognized nonhuman persons, it can be shown that the presence of uplift biotechnologies will represent a new primary good and will thus necessitate the inclusion of highly sapient nonhumans into what has traditionally been regarded as human society. In addition to issues of distributive justice, the Rawlsian notion of original position can be used to answer the question of whether or not there is consent to uplift. Finally, it will be shown that the presence of uplift biotechnologies in the absence of the legal recognition of nonhuman persons and a mandate for responsible uplifting will ultimately lead to abuse, adding another important consideration to the uplift imperative.

INTRODUCTION

Recent initiatives in Spain and New Zealand seeking to establish legal personhood status for the great apes represent unprecedented steps in the history of the animal rights movement. Great apes are poised to be endowed with those rights that have traditionally been ascribed to humans, a development that would see their promotion from non-persons with property-like status to persons with real and enforceable protections. In all likelihood, and though it may take some time, other countries will likely follow suit.

Humanity has been widening its moral purview for some time now. With rights potentially being passed down to the great apes, it can be said that humans are widening both their moral and social circles. This is a trend that will have profound implications for the relationship between humanity and nonhuman animals.

As the potential for enhancement technologies migrates from the theoretical to the practical, a difficult and important decision will be imposed upon human civilization, namely the issue as to whether or not we are morally obligated to biologically enhance nonhuman animals and integrate them into a larger postbiological society.

Animal uplifting, also referred to as biological uplift, or simply uplift, is the theoretical prospect of endowing nonhumans with greater capacities, including and especially increased intelligence¹. A number of trends are in the process of converging which will in short order force the issue of animal uplift to a head. First, there is the strong potential for the development of the so-called GNR technologies (genetics, nanotechnology, and robotics/AI) that will make augmentation possible for humans²; consequently, these interventions will also be applicable to nonhuman animals³. The second trend is the rise in prominence of nonanthropocentric ethics and the designation of legal personhood status to nonhumans. Third, the potential for abuse and the creation of wrongful lives through the use of uplift technologies will need to be offset by sanctioned methods of animal uplift.

Precedents for intra-species cultural uplift abound in human history, providing both sobering and edifying episodes showcasing the possibilities for the instigated and accelerated advancement of culturally and technologically delayed societies. As a number of scientists, philosophers and futurists have recently revealed, there is mounting evidence in support of the suggestion that these historical episodes are symptomatic of a larger developmental trend, namely the inexorable and steady advancement of intelligence. A strong case can be made that life and intelligent civilizations on Earth have been following a general developmental tendency away from unconscious Darwinian processes and towards increased organization and intelligent control.⁴ As Steven J. Dick has noted through his Intelligence Principle, "the maintenance, improvement and *perpetuation* of knowledge and intelligence is the central driving force of cultural evolution, and that to the extent intelligence can be improved, it will be improved."⁵ [italics added]

This steady march of progress will eventually result in an existential phase transitioning that will in all likelihood extend to other sapient life and the biosphere itself. Consequently, the status of nonhuman species and the condition of the biosphere will eventually come under the purview of guided intelligence rather than autonomous processes.

That said, a developmental tendency towards uplift does not imply that it is good or right; more properly, it can be argued that uplift scenarios do in fact carry moral currency. Considerations that offer ethical weight to such a seemingly radical mandate include improved safety and health, the prevention of abuse, better lives, and minimal acceptable standards of living and wellness for all sapient life.

In addition, through the application of Rawlsian moral frameworks, and in consideration of the acknowledgement of legally recognized nonhuman persons, it can be shown that the existence of uplift biotechnologies will represent a new primary good and will thus necessitate the inclusion of highly sapient nonhumans into what has traditionally been regarded as human society. And in

addition to issues of distributive justice, the Rawlsian notion of original position can be used to answer the question of whether or not there is consent to uplift.

Indeed, the right to self-determination and liberty are among the most esteemed of human values, and as nonhuman animals increasingly enter into humanity's circle of moral and legal consideration they are increasingly coming to be considered as members of the social contract. The very possibility of biological enhancement is expanding the sense of who is within humanity's social circle and who the least advantaged individuals are in society.

And lastly, it will be shown that the presence of uplift biotechnologies in the absence of the legal recognition of nonhuman persons and a mandate for responsible uplifting will ultimately lead to abuse, adding another important consideration to the uplift imperative.

UPLIFT HAPPENS

Nature versus nurture

Biological uplift is one of two major ways in which an organism can be endowed with superior or alternative ways of physical or psychological functioning. Memetic uplift, or cultural uplift, is distinguished from biological uplift in that it typically involves members of the same species and does not require any intrinsic biological alteration to the organism. While biological uplift is still set to happen at some point in the future, cultural transmission and memetic uplift have been an indelible part of human history.

Memetic uplift can be construed as a soft form of uplift. Memes are by their very nature rather ethereal cultural artifacts, whereas biological uplift entails actual physical and cognitive transformation. That's not to suggest that inter-generational non-genetic transfer of information is subtle. Society and culture have a significant impact on the makeup of an individual. That said, human psychology is powered by genetic predispositions that function as proclivity engines, endowing persons with their unique personalities, tendencies and latent abilities.

Proclivities do not exist in a vacuum, of course, and that is why the environment continues to play an integral role in the development of the entire phenotype. How persons are socialized and which memes they are exposed to determines to a large part who and what individuals are as sentient, decision-making agents. Consequently, people are constrained and moulded in a non-trivial way by their culture-space. Humans have moved beyond their culturally and phenotypically primitive Paleolithic forms owing to the influence of an advanced culturally extended phenotype and the subsequent rise of exosomatic minds and bodies.⁶

An example of memetic uplift

One of the most striking examples of memetic uplift was the colonization of the Americas by the Europeans. From a macrohistorical perspective, the clash of European and indigenous American civilizations was one between a post-feudal monarchist society and a Stone Age culture. The wide technological and cultural gap separating the two societies gave the Europeans a considerable edge in their ability to successfully wage an invasion that resulted in the embedding of their political, economic, and religious institutions on the continent. The Europeans were also proactive about "civilizing" aboriginal peoples -- in some cases forcing them to attend English schools or converting them to Christianity. Today, very few aboriginals, if any, are able to maintain a lifestyle that even modestly resembles life in pre-colonial times.

There is a risk, however, of overstating this episode as an example of cultural invasion or uplift. It was a slow and protracted process of cultural transference -- one in which memetic transmission was bi-directional (albeit somewhat lopsidedly). Cultural extinction of native life did not occur, but instead suffered significant erosion. Further, the colonization of the Americas resulted in the emergence of an entirely new set of cultures.⁷

This period of history was traumatic in a real sense and it is often considered one of the more regrettable periods of human history. Yet the episode raises considerable food for thought and the opportunity for some thought experiments. Was it inevitable? If not, how is it possible that history could have been replayed any differently? Could it have been done with greater sensitivity and concern for the native way of life? Would our society today do a better job? Assuming a hands-off policy could have been exercised with regards to the intermingling of civilizations, would it have been ethical to allow the aboriginals to continue living a Stone Age life? Assuming this is truly an example of cultural uplift, in which ways was it a success and in which a failure?

These are difficult questions with complex answers. However, as history has shown, the intermingling and assimilation of disparate cultures was and is an indelible part of the human condition. Information swapping is a developmental reality that has been largely unavoidable.⁸ Such is the nature of data accumulation, organization and transmission at the hands of intelligence. The question at the dawn of the 21st century is how genetic information will be organized and transmitted—and to whom.

Conceptions of progress and the rise of cultural relativism

The European colonization of the Americas, along with other similar episodes, is an extremely sensitive area of debate, often leading to discussions that skirt the fringes of acceptability in terms of political correctness⁹. Part of the problem is the rise of cultural relativism, particularly as it pertains to the assessment of ancient life and how it compares to modernity.

Objective assessment is often difficult, in part the result of the romantic perceptions many people carry of pre-civilizational existence and the cynical take some have in regards to modern life. Factors contributing to this sentiment include the disruptive nature of technological advance on individuals and cultures, the failed totalitarian experiments of the 20th century, the two catastrophic world wars, the rise of apocalyptic threats, and the calamitous effects of modern society on the environment.

Driving this negative view of modern society even further is the prevailing pseudohistorical romanticization of primitive life evident in popular culture and perpetuated by a number of intellectuals.¹⁰ What the biblical 'Garden of Eden' and Rousseauian 'noble savage' myths often fail to take into account, however, is how nasty, brutish and short life used to be. A strong case can be made that social and technological progress happens for a reason, namely the steady improvement of conditions and the pursuit of a more dignified and fulfilling life for individuals. Humanity is a self-domesticating species.

Given where humanity finds itself today--particularly in regards to the benefits of technologies and institutions that are all too often taken for granted--very few people would voluntarily choose to go back to a Stone Age way of life. The memetic endowments of human civilization not only allow people to actualize and express themselves better, but they also protect individuals from the dangers of nature, arbitrariness, and undue suffering in general.

A common criticism levied at this line of reasoning is that it is coming from the perspective of "home-field advantage." Given the often deplorable experience of aboriginals who have been integrated into modern society, it is often assumed that natives would be happier living a tribal existence and if given the opportunity would voluntarily return to such a life. Further, some argue that there is no correlation between technological development and increasing levels of happiness.

Recent events involving Columbia's isolated nomadic Nukak Maku tribe contradict these assumptions. In May of 2006 a group of nearly 80 Nukak left the jungle and asked to "join the White Family." This event offered an unprecedented opportunity to determine the state of mind of those wishing to leave Stone Age life. It is one thing to ask an integrated aboriginal whether or not he wishes to return to tribal life when he has never lived such a life, and quite another thing to ask an aboriginal who has actually been there.

When asked if they were sad to leave the jungle a Nukak named Pia-pe laughed at the suggestion and proclaimed that they “could not be happier.” The Nukak, who were used to long marches in search of food, were amazed at the open availability of foodstuffs. When asked what they liked the most, they responded with a lengthy list of items that included pots, skillets, matches, soap, pants, shoes, caps, rice, sugar, oil, flour, eggs and onions. One young Nukak mother noted, “When you walk in the jungle your feet hurt a lot.” The group is now learning to plant crops and intend on sending their children to local schools.¹¹

At first glance the story of the Nukaks appears to be a success, but only time will tell. It appears that the local population has been very accommodating to the newcomers. This is a far cry from the events that characterized the broader integration of Native Americans – a development that was marred by the dominating and bellicose nature of the invaders and their failure to bring aboriginals into the larger social circle. This is a struggle that persists to this very day, and in this sense it is still a work in progress.

That said, virtually all episodes in which primitive cultures are influenced by more advanced ones represent precursors to the biological uplift of highly sapient nonhuman species.

Cultural uplift of nonhuman animals

Culture, as many zoologists can attest to, is hardly the exclusive domain of humans. Animals such as the great apes and dolphins have the ability for not just language skills, but for being able to pass memes down from generation to generation.¹² This raises an interesting question: Given that some nonhuman animals are capable of engaging in cultural activities, and given that we value certain attributes about human culture, is it both possible and desirable to share our culture with other species?

The Great Ape Trust in Iowa¹³ is engaging in an activity that is exploring this very issue. In their experiment, bonobos, which are part of the great ape family that include chimpanzees, gorillas, and orangutans, have been given their own house in which to live and dwell.¹⁴ In 2005 organizers placed eight bonobos in a multi-million dollar facility in what is hoped will be a successful long term and multi-generational experiment.

The house is equipped with 18 rooms that include a kitchen in which to prepare meals and vending machines that dispense snacks. There are flushing lavatories, an indoor waterfall and walls for climbing. When it comes time to eat, the apes help their human handlers prepare meals in a compound kitchen. The bonobos can monitor the front door with a camera and decide for themselves who can come in – although they are known for welcoming visitors and often taking newcomers by the hand to show them around the complex.

In addition to the rudiments of daily domestic life, the bonobos have access to art supplies, musical instruments and entertainment, including television. Researchers hope that with the right stimulation the bonobos, who already understand a limited human vocabulary, will develop skills that include language, art and music. If successful, the experiment would show that many activities previously thought of as uniquely human are not innate to *Homo sapiens*.

One of the bonobos, a 25-year-old, can accurately answer questions equivalent to that of a three-year-old human and is able to make up sentences using several lexigram words. In addition, because chimps' vocal tracts make it impossible for them to replicate human speech, the bonobos communicate by using touch-sensitive computer screens with over 250 symbols.¹⁵ Like their human handlers, the apes are using their newfound tools to overcome their biological limitations.

Indeed, over the course of the experiment the lines between cultural and biological uplift are already starting to blur. The bonobos have even been given a type of cybernetic augmentation in the form of a voice synthesizer to vocalize their desires.

Without more significant biological augmentation, however, the Great Ape Trust experiment has its limitations. Thomas Suddendorf, an experimental psychologist from Queensland, is skeptical about the researchers' hopes that the apes will learn to communicate more complex notions. He contends that bonobo psychology is intractably limited, citing their inability to consider abstract concepts such as past or future, their inability to grasp syntax, and the fact that they have yet to display active teaching behaviours.¹⁶

Nevertheless, the Great Ape Trust model is an excellent starting block for not just cultural uplift, but for biological uplift as well. This endeavor is not meant to assimilate or "humanize" nonhuman species, but instead efforts that work to advance apes and their proto-culture. In this way, bonobos and other potentially uplifted nonhumans will ideally become autonomous decision making agents within a larger inter-species society. As the organizers of the Trust themselves state, the apes' intelligence, communication, social interactions and cultural expression must be advanced respectfully, honorably and openly.

In looking at the colonization of the Americas, and considering ongoing trends in economic, political and cultural globalization, it appears that more advanced civilizations influence, either actively or passively, other less developed societies to come along for the ride. As the human moral and legal purview expands to include nonhuman persons, it is not too extreme to suggest that humanity will increasingly come to be concerned with the welfare of highly sapient animals. Uplift need not be considered unjust or coercive; the impetus that drives human civilization is one of progress and refinement. Consequently, it may not only be a good thing to uplift nonhuman animals, but as it will now be argued, it may also be within the realm of human obligations.

UPLIFT ETHICS

Considering nonhuman persons

Humanity's relationship with animals has varied drastically over the millennia.

Animals were once (and some still are) our predators, contributing directly to the course of human evolution. They have inspired us to art--right from the time we were first able to translate our thoughts onto the walls of a cave. They have played an indelible part in our religions, at once the object of reverence, and later the object of our dominion. We have made them into our beasts of burden. They have entertained us. Animals have joined us in combat as our vehicles, weapons and messengers. We have kept animals as our companions, tried and punished them in human courts, moulded them into bizarre forms and driven entire species into extinction. Today, our relationship with animals is still changing, the most recent development being the rise of the animal rights movement.

The modern animal rights movement was given its kick-start in 1975 by Australian bioethicist Peter Singer by virtue of his seminal book, *Animal Liberation*. Since that time, Singer has worked to advance the notion that personhood is not exclusive to *Homo sapiens* in both in the cognitive and legal sense. To this end he founded the Great Ape Project, which in addition to advocating for ape personhood, sets aside more modest tasks like establishing minimum space requirements for animals in confinement.¹⁷

Singer's revolution is arguably still in its infancy, but there have been some recent breakthroughs that are taking the movement to the next phase. New Zealand took the first steps by passing an animal welfare act in 1999 declaring that research, testing or teaching involving the use of a great ape requires government approval--a move that essentially banned the practices. Britain soon thereafter invoked a similar ban. More recently, in April 2006 members of Spain's socialist party announced that it would introduce a bill calling for "the immediate inclusion of (simians) in the category of persons, and that they be given the moral and legal protection that currently are only enjoyed by human beings."¹⁸ New Zealand is current working to introduce similar legislation, hoping to promote ape status from property to person. Such measures would represent a noteworthy step beyond mere moral consideration to that of enforceable protections. Should these bills be passed, states would be responsible for the welfare and protection of legally

recognized nonhuman persons.

The rationale behind the creation of these bills is the realization that great apes and humans share similar psychological attributes such as the capacity for strong self-awareness, emotion, empathy and language. Work in genetics has revealed that the great apes and humans share nearly 98-percent of their genome.¹⁹ Various intelligence tests, brain scans and observations indicate cognitive faculties similar to those of humans. Given the mounting scientific and empirical evidence, it is becoming increasingly unacceptable to withhold consent in regards to the presence of animal consciousness and emotional experience.

As these initiatives move forward, and as the animal rights movement continues to evolve, it can be said that humanity's relationship with animals has transitioned from subjugation to moral consideration. And tomorrow it will transition from moral consideration to social co-existence.

The Ethical imperative to uplift

Enhancement biotechnologies will profoundly impact on the nature of this co-existence. Today, efforts are placed on simply protecting animals. Tomorrow, humanity will likely strive to take this further – to endow nonhuman animals with the requisite faculties that will enable individual and group self-determination, and more broadly, to give them the cognitive and social skills that will allow them to participate in the larger social politic that includes all sentient life.

As many transhumanists and technoproggressives are inclined to point out, human enhancement offers an unprecedented opportunity for the human species to transcend biological limitations. These include not just the benefits of what may be gained, but also the benefits of what may be discarded.

In terms of what humanity may hope to gain, there are potential enhancements such as greater health and wellness, increased intelligence and memory, improved psychological control, longer lives, and novel capacities. Some of the principle arguments in favour include the recognition of fundamental bio-rights that include reproductive, morphological, and cognitive liberties. Healthier people, it is argued, will also save individuals and their governments from spending inordinate sums of money that are currently required to battle all types of ailments, including the costs of aging itself.²⁰ It is also argued that enhancement technologies will result in persons more capable and willing to engage in social and political causes. In this sense, transhumanism holds radical promise for the furtherance of democratic and participatory values.²¹

As to what humanity may hope to lose with biological augmentation, humans are poised to discard their often fragile and susceptible biological forms. It is hoped that the ravages of aging will be brought to an end,²² as well as the arbitrariness of the genetic lottery.²³ More conceptually, human evolution is poised to go undergo an evolution of its own where it goes from unconscious Darwinian selection to deliberate and guided quasi-Lamarckianism.²⁴ Driving this transition is the ingrained human desire to move beyond a state of nature in which an existential mode is imposed upon *Homo sapiens*, to one in which humanity can grow increasingly immune to unconscious and arbitrary processes. An emergent property of intelligence is its collective aversion to chaos; it perpetually works to increase levels of order and organization.

These compulsions are held by many to represent strong ethical and legal imperatives. Given the animal rights movement's goal to increase the moral circle to include higher animals, and given that a strong scientific case can be made in favour of animal personhood, a time will come for humanity to conclude that what is good for the goose is also good for the gander.

Furthermore, it would be unethical, negligent and even hypocritical of humans to enhance only themselves and ignore the larger community of sapient nonhuman animals. The idea of humanity entering into an advanced state of biological and/or postbiological existence while the rest of nature is left behind to fend for itself is distasteful.

Why uplift nonhuman animals? What is it that we hope they will gain? Ultimately, the goal of uplift is to foster better lives. By increasing the rational faculties of animals, and by giving them the tools to better manage themselves and their environment, they stand to gain everything that we have come to value as a species.

Issues of fairness, primary goods and distributive justice

The suggestion that a moral imperative exists to uplift sapient nonhumans infers that humans have an obligation to do so. Political and moral philosophers have struggled with the issue of obligations since the beginning of human social organization, due mostly to apparent incompatibilities and inconsistencies between liberty and the sense of imposition or even coercion.

Various frameworks have been proposed to deal with these issues, including social contract frameworks devised by Hobbes, Locke, Rousseau and Kant. More recently, and in the context of human enhancement, there has been the work of Martha Nussbaum and Amartya Sen who have proposed a capabilities approach in which an individual's 'functioning' is tied directly to the quality of their ability to act in society.²⁵

Quite obviously these frameworks have interesting ramifications for arguments in support of uplift scenarios, but the most potent methodology that can be applied to the issue of bringing nonhumans into the human social fold is the theory of justice proposed by philosopher John Rawls. While concerned with human society, Rawls's theories reveal a high degree of relevancy to issues of animal welfare, particularly when one ascribes a certain degree of moral worth and personhood consideration to sapient nonhumans.

One of Rawls's more important contributions to political theory was his concept of *original position* in which individuals decide principles of justice from behind a *veil of ignorance*. The purpose of Rawls's thought experiment was to weed out any preconceived notions of social position or privilege in order to devise the most fairest of social arrangements – the general idea being that ignorance of one's social position and capabilities will result in the creation of the most fairest and equitable of frameworks. As Rawls noted, in the original position "no one knows his place in society, his class position or social status, nor does anyone know his fortune in the distribution of natural assets and abilities, his intelligence, strength, and the like. I shall even assume that the parties do not know their conceptions of the good or their special psychological propensities. The principles of justice are chosen behind a veil of ignorance." Rawls's special claim is that all those in the original position would adopt a risk-minimizing strategy that would maximize the position of the least well off.²⁶

Rawls understandably chose a reference class of *Homo sapiens*, but for reasons already discussed, there is no good reason to exclude nonhumans from this thought experiment. In fact, one could argue that Rawls provisioned, either intentionally or unintentionally, the inclusion of nonhumans by virtue of including psychological and physical propensities in the list. Consequently, Rawls's veil of ignorance should also obscure knowledge of one's species.

Decisions about justice and fairness, argued Rawls, would ultimately lead to consensus on issues of rights and duties and the distribution of social and economic advantages. In regards to how these principles were to be executed, Rawls suggested that they be crafted in such a way as to be of the greatest benefit to the least-advantaged members of society. Considering that nonhumans are completely shut-out from the social contract and carry negligible social standing, they should be considered among the most least-advantaged (what is referred to as the *difference principle*).²⁷

Quite obviously, even the most sentient and social of nonhuman animals lack the requisite cognitive and linguistic faculties to engage in advanced society; the human monopoly on what is regarded as 'society' has arisen as a consequence of gross discrepancies in abilities. At first blush, therefore, social considerations for animals would appear to be a non-issue (and even nonsensical). However, pending enhancement biotechnologies alter this picture dramatically.

For nonhuman animals these discrepancies in abilities qualifies as a deficient primary good required for the attainment of fair and equal opportunity. Like some humans who argue that they have fared poorly in the genetic lottery, it can be said that nonhumans have missed out in the species lottery. Thus, when considering agents who are provisioning for a just society in the original position, and considering that the reference class should include sapient non-humans, it is fair and reasonable to assert that they would make contingencies for the uplift of nonhumans given the availability of the technologies that would allow for such endowments. To do otherwise would be the unfair distribution of primary goods that are requisites for political participation, liberty and justice. As Rawls surmised, individuals in the original position would adopt those principles that would govern the assignment of rights and duties and regulate the distribution of social and economic advantages across society.²⁸

Given the very real potential for biological augmentation some time later this century, the means to better distribute primary goods will eventually come into being and will by consequence enter into the marketplace of distributable primary goods. To deny nonhumans access to enhancement technologies, therefore, would be a breach of distributive justice and an act of genetic or biological exceptionalism – the idea that one's biological constitution falls into a special category of goods that lie outside other sanctioned or recognized primary goods. Such claims, as argued by Allan Buchanan and others, do not carry much moral currency.²⁹

Indeed, liberal theories of distributive justice necessarily provision for the elimination or mitigation of the undeserved effects of luck on welfare.³⁰ Fair equality of opportunity, argued Rawls, requires not merely that offices and positions be distributed on the basis of merit, but that all persons have reasonable opportunity to acquire the skills on the basis of which merit is assessed.³¹ These skills, in the context of animal uplift, are the biological augmentations that would enable social interaction at the 'human' level (at the very least).

Critics contend that Rawls's idea was to examine how a just society could be created no matter the socioeconomic or morphological composition of its members. The argument from Rawls, they argue, is that humans need to create an environment that will allow humans to be happy as humans and animals happy as animals.

What this line of thinking fails to take into account, however, is the presence of those primary goods in society that, when not equally distributed, prevent persons from living a just life. As Rawls noted, each person has an equal right to a fully adequate scheme of equal basic liberties which is compatible with a similar scheme of liberties for all. The introduction of uplift biotechnologies will greatly perturb the sense that *Homo sapiens* is the only species on the planet deserving of our most fundamental values.

The issue of consent

While it can be argued that humans are obligated to integrate sapient nonhumans into a larger inter-species society, the question of consent must also be addressed. Unfortunately, no matter how hard we try we would never be able to convey the complexities of the issue to nonhumans, and thus, cannot depend on getting informed consent from the agents themselves. In this sense, it is a situation similar to the ethical quandary of genetic modifications and the consent of the unborn and young children. Consent (or non-consent), therefore, has to be deduced and inferred by proxy.

Again, the Rawlsian framework offers a way to deal with the issue. As Rawls noted, the veil of ignorance includes knowledge of one's actual psychological disposition. As already argued, psychological dispositions can be reasonably interpreted in such a way as to include the psychological and physical condition of nonhuman animals. Assuming that a nonhuman would participate in the original position experiment as a free and rational decision-making agent, it's not unreasonable to conclude that they would, like humans, come to the same set of principles designed to protect the interests of the entire reference class.

Persons in the original position, it is reasonable to say, would be very concerned about incarnating as a nonhuman animal and would undoubtedly work to ensure that all the safeguards be put in place to protect their potential interests. Moreover, knowledge of how uplift biotechnologies could better disseminate primary goods among the species would most certainly be a weighty consideration. Actors in the original position would employ game theoretic logic in making their decisions, employing the *maximin* strategy in which choices produce the highest payoff for the worst outcome. The prospect of coming into the world as a great ape, elephant or dolphin in the midst of an advanced human civilization can be reasonably construed as a worst outcome.

Therefore, humanity can assume that it has the consent of sapient nonhumans to biologically uplift.

Less conceptually, there is an alternative way in which both consent and uplift efficacy can be determined: uplift sampling. Rather than uplift an entire species, several individuals could be uplifted in order to assess the effectiveness of the experiment. Uplifted animals could conceivably act as spokespersons for their species and provide a valuable insight into the process and whether or not the change was desirable.

Regulating uplift to prevent abuse

Just how uplift will happen, how it will be ethically administered, and which animals will be chosen are issues that are beyond the scope of this paper, but suffice to say they will be challenging issues with some potentially intractable problems that may forgo the project altogether.

That said, there is one particular issue that does require immediate consideration--one that will add a sense of urgency in regards to the implementation of safety measures and regulation on the eve of biological modification. The issue in question is the creation of partial human hybrids or chimeras.

The creation of subhumans is within the realm of theoretic possibility. Transgenic organisms are now created with ease, including goats that can secrete spider-silk³² and pigs that glow in the dark.³³ It is conceivable that human DNA can be intertwined with those of other animals to create a number of novel and bizarre physical forms.

Animals may also be engineered to have specialized physical or cognitive characteristics while lacking certain neurological faculties. Theoretically, such creatures could be designed for specific tasks, such as manual labour, dangerous work, or as sex trade workers--and at the same time be oblivious to the demeaning or hazardous nature of their work. For all intents and purposes these would be happy slaves.

This is a repugnant possibility and an affront to humanitarian values. Interventions designed to deliberately constrain a sentient organism such that it is incapable of empowered participation in the broader social community is grossly unethical and should be considered illegal. The ultimate goal of animal uplift is the creation of equal social partners and not a species to be subjugated.

The most sure-fire way to avoid this scenario is to extend legal personhood rights to those worthy of such consideration. As a word of warning, should humanity, for whatever reason, decide that animals are not worthy of personhood status, and should the human species not venture down the path that would lead to eventual co-existence with nonhumans as intellectual and social equals, the doors to abuse would be left wide open. Animals would continue to be looked upon as property and as the subjects of our experimentation and petty desires.

For that reason, nonhuman animals need to be explicitly protected from modifications that would deliberately constrain their psychologies or physical abilities. Preconceived and preconditioned existences are as wrongful for nonhumans as they would be for humans. Further, regulatory legislation will need to be established so that uplift can transpire under safe, monitored and humane conditions.

Addressing criticisms

A difficult conceptual leap for many is getting over the species barrier. For many critics, the idea of including nonhumans alongside humans in a social context is a violation of naturalistic sensibilities. Such claims are often made on behalf of the 'human exceptionalists,' a group that includes such thinkers as ethicist Wesley Smith.

The idea of 'species,' while helpful in such fields as systematics and genetics, is not an entirely useful concept when establishing the moral worth of an animal. Once stripped of scientific nomenclature, nameless organisms can be classified based on their various morphological and psychological capacities. In this context, animals—including humans—can be contrasted in reference to an agreed upon spectrum of minimally acceptable modes of functioning.

Put yet another way, nonhuman animals such as the great apes can be construed as disabled humans. When articulated in this way, notions of obligations, accommodation and stewardship are cast in an entirely new light.

The idea that nonhumans should be uplifted so that they more closely resemble *Homo sapiens* has been interpreted as a rather anthropocentric perspective. As already stated, the goal is not to transmutate animals in humans, but to improve their quality of life by endowing them with improved modes of functioning and increased health. If anything, the uplift argument is intellicentric and even quasi-perfectionist. Moreover, uplift is primarily advocated by transhumanists who also make the case for *Homo sapiens* to move beyond human limitations – a rather non-anthropocentric position.

Finally, there is the issue of identity and the potential destruction of a nonhuman animal's former self. This is essentially the identity objection. Indeed, the uplifted animal will barely resemble its former self, and will for all intents-and-purposes be a new person³⁴. That said, so long as the continuity of memory is maintained, the uplifted animal will still remember its past, and consequently, retain a fluid sense of self. The effect may be similar to the way in which an adult reflects on her childhood.

Conclusion

A future world in which humans co-exist with uplifted whales, elephants and apes certainly sounds bizarre. The idea of a United Nations in which there is a table for the dolphin delegate seems more fantasy than reality. Such a future, however, even when considering the presence of uplifted animals, may not turn out just quite the way we think it will.

Intelligence on the planet Earth is set to undergo a sea change. Post-Singularity minds will either be manifest as cybernetic organisms, or more likely, as uploaded beings. Given the robust nature of computational substrate, intelligence is set to expand and diversify in ways that we cannot yet grasp, suffice to say that postbiological beings will scarcely resemble our current incarnation.

In this sense, 'postbiological' is a more appropriate term than 'posthuman'. The suggestion that posthumans will live amongst post-apes and post-elephants misses the point that a convergence of intelligences awaits us in our future. Our biological heritage may only likely play a very minor part in our larger postbiological constitution -- much like the reptilian part of our brain does today in terms of our larger neurological functioning.

And like the other sapient animals who share the planet with us, and with whom we can claim a common genetic lineage, we will one day look back in awe as to what was once our shared biological heritage.

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¹ For an excellent science fiction treatment of uplift scenarios, see David Brin's *Uplift* series.

² See Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology*, Viking Adult, 2005; Joel Garreau, *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies -- and What It Means to Be Human*, Doubleday, 2005; Ramez Naam, *More Than Human: Embracing the Promise of Biological Enhancement*, Broadway, 2005; Gregory Stock, *Redesigning Humans: Our Inevitable Genetic Future*, Houghton Mifflin, 2002; Mihail C. Roco and William Sims Bainbridge, eds. "Converging Technologies for Improving Human Performance: Nanotechnology, Biotechnology, Information Technology and Cognitive Science", *National Science Foundation*, http://www.wtec.org/ConvergingTechnologies/Report/NBIC_report.pdf.

³ Given the strong possibility that enhancement technologies will be initially tested on nonhuman animals (whether in an ethical or unethical fashion), it is likely that uplift technologies for animals will come into existence before human versions.

⁴ See Robert Wright, *Nonzero: The Logic of Human Destiny*, Vintage, 2001; John Smart, "Intro to the Developmental Singularity Hypothesis (DSH): A Speculative Evolutionary Developmental Model for Our Universe's History of Hierarchical Emergence Under Conditions of Continuously Accelerating Change", last accessed June 1, 2006, <http://www.accelerationwatch.com/developmentalsinghypothesis.html>.

⁵ Stephen J. Dick, 2003. *Int J. Astrobiology*, 2, 65.

⁶ The *exosomatic organ theory of technology* was originated by Ernst Kapp (1808-1896) in his seminal book, *Grundlinien einer Philosophie der Technik (1877)*.

⁷ Felipe Fernandez-Armesto, "Atlantic Empires and the Exchange of Cultures," lecture at the University of Western Ontario, April 2006.

⁸ See Jared Diamond, *Guns, Germs and Steel: The Fates of Human Societies*, W. W. Norton & Company, 1999; Wright, *Nonzero*.

⁹ The field of sociobiology, as championed by E. O. Wilson and Jared Diamond, has faced much criticism over the years and has only recently been considered a credible academic approach to history and social issues. See the Discover interview with E. O. Wilson: <http://www.discover.com/issues/jun-06/features/e-o-wilson>, Vol. 27, No. 06, June 2006.

¹⁰ The deep ecology movement immediately comes to mind. See Arne Naess, *Ecology, Community and Lifestyle: Outline of an Ecosophy*, Cambridge University Press; Reprint edition (October 26, 1990).

¹¹ Juan Forero, "Leaving the Wild, and Rather Liking the Change," *New York Times*, May 11, 2006.

¹² Michael A. Huffman, *Acquisition Of Innovative Cultural Behaviors In Nonhuman Primates: A Case Study Of Stone Handling, A Socially Transmitted Behaviour In Japanese Macaques*. In Cecilia M. Heyes and Bennett G. Galef Jr., editors, *Social Learning in Animals*, chapter 13, pages 267-289. Academic Press, 1996; Rob Stein, "'Sponging' Dolphins May Be Sharing Culture", *Washington Post*, Monday, June 27, 2005; Page A07.

¹³ Go to <http://www.greatapetrust.org/> for more information.

¹⁴ James Langton "Chimps in 'Big Brother house' will learn how to be human," <http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2005/05/15/wchimp15.xml&sSheet=/news/2005/05/15/ixhome.html>, *The Telegraph*, May 15, 2005; Daniel Dasey, "Watching apes play Big Brother to learn more about ourselves," <http://www.smh.com.au/news/Science/Apes-like-us/2005/05/01/1114886243707.html>, *The Sydney Morning Herald*, May 1, 2005.

¹⁵ IBID.

¹⁶ IBID.

¹⁷ For more information, go to <http://www.greatapeproject.org>

¹⁸ "Socialists: Give apes human rights," <http://www.spainherald.com/3438.html>, *The Spain Herald*; David Rennie, "Drive to give 'human' rights to apes leaves Spanish divided," <http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2006/06/10/wapes10.xml&sSheet=/news/2006/06/10/ixnews.html>, *The Telegraph UK*, June 10, 2006.

¹⁹ Ann Gibbons, "Comparative Genetics: Which of Our Genes Make Us Human?" *Science* 281, 5382 (4 Sep 1998): 1432 - 1434.

²⁰ Olshansky et al., "The Longevity Dividend," *The Scientist*, Volume 20, Issue 3, Page 28, March 2006.

²¹ See James Hughes, *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human*

of the Future, Westview Press, 2004.

²² See Ray Kurzweil and Terry Grossman, "*Fantastic Voyage: Live Long Enough to Live Forever*," Rodale Books, 2004.

²³ See Robertson, *Children of Choice*, and Buchanan et al, *From Chance to Choice*.

²⁴ See Hans Moravec, *Mind Children : The Future of Robot and Human Intelligence*, Harvard University Press, 1990, E. O. Wilson, *Consilience: The Unity of Knowledge*, Vintage, 1999 and Kurzweil, *Singularity is Near*.

²⁵ As summarized by Cavery Bopaiah, "...Amartya Sen's capability approach looks beyond monetary measures and offers a flexible framework for recording improvements, disparities, and potentials even within a family. Capabilities are what people are able 'to do and to be' in leading a life - even if they are not necessarily doing it. What persons actually do are their 'functionings'. Capabilities are therefore potential functionings and not achievement or outcome. The capability framework sees well-being as a combination of 'functionings' that include being well nourished, healthy, and educated as well as having choices, political freedom, and the ability to participate in community life."

<http://www.hindu.com/br/2006/06/13/stories/2006061302521500.htm>

²⁶ Rawls, *Theory of Justice*, 11.

²⁷ IBID, 303. (1971)

²⁸ "A *Theory of Justice*," Wikipedia: http://en.wikipedia.org/wiki/A_Theory_of_Justice, last accessed June 13, 2006.

²⁹ See Buchanan et al, *From Chance to Choice*.

³⁰ David Neil, "Genetic Preselection and the Moral Equality of Individuals," (draft version) Oxford, January 24, 2006: <http://www.fhi.ox.ac.uk/Papers/DNeilUpdatedGeneticPreselection.pdf>.

³¹ "A *Theory of Justice*," Wikipedia.

³² "GM goat spins web based future", BBC News, <http://news.bbc.co.uk/1/hi/sci/tech/889951.stm>, August 21, 2000.

³³ "Taiwan breeds green-glowing pigs" BBC News, <http://news.bbc.co.uk/2/hi/asia-pacific/4605202.stm>, January 12, 2006

³⁴ There is considerable debate about identity over time and whether or not a 'self' exists in the first place.