

Re-defining the Human: Triumphs and Tribulations of *Homo xeroxiens*

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Abstract: *In the endless human quest for understanding the nature of life, cloning represents a new fundamental paradigm. Making a major departure from the normative mode of reproduction, it forces a new division of genetic endowment. Consequently, biological identity and individuality come to acquire new meanings. The inherent instrumentalism of cloning thus advances the dependence of moral choices in society. Ultimately, it manifests itself in the trinity of instrumentalism, namely: objectification, reductionism, and determinism. This, more than any thing else, is the epic of contingency of the episteme. A contingent episteme in turn assumes the role of a moral arbitrator. This paper argues that cloning is the most potent catalyst for the emergence of neo-Genesis. The technological reincarnation then is merely a function of the inevitable evolution of the technique. Legislative controls on the technique itself simply betray the underlying moral contingency. It is asserted that irrespective of these controls, eventually, cloned human beings would be a reality. The dilemma faced by us, therefore, is not the challenge of technique but a judgement on the moral future of human society. Is the "new birth" also the birth of a new norm? An unfolding of a new world of identity, rights, responsibilities, and a worldview?*

Cloning, in one of its apparently benign modes—somatic cell nuclear transfer—is a simple transfer of genetic material from the nucleus of a somatic cell to an enucleated cell. However, such an affable application of this biological technique betrays a complex web of scientific, legal, religious and moral issues.

This technique, employed by the Scottish scientist Ian Wilmut and his colleagues at the Roslin Institute near Edinburgh, created a new individual

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genetically identical to an existing entity. Their work comprised of transplantation of genetic substance of an adult sheep, apparently derived from a differentiated somatic cell, into an enucleated ovum. A cloned sheep, named Dolly, was thus born on July 5, 1996.¹

The birth of Dolly was different in many respects from previous attempts at cloning involving nuclei from non-human embryonic and fetal cells. The embryological knowledge through the ages has propagated the idea that structural and functional development leading to cell differentiation was an irreversible process. Exceptions to the rule were noted but never proved. It now becomes obvious that Dolly's birth has overturned one of the fundamental biological axioms, showing that somatic cells are encoded with genetic information that is not irretrievably lost during development. Next, the appearance of a delayed genetic twin has added a new dimension to our understanding of the birth of twins, whether identical or fraternal. Lastly, Dolly has forced upon us a revised taxonomy of the parenting process. In the footsteps of in vitro fertilization that bisected motherhood into biological and social components, Dolly has come to re-define parenting into genetic and somatic elements, whereby the genetic material of only one parent is sufficient for the onset of progeny. Thus, gender-free biological parenting has come of age.

In line with a plethora of products of reproductive technology, Dolly has again forced us scurrying for answers to a host of moral and ethical questions. While the widespread research on animal embryos, including transgenic experiments and variations on the cloning theme, has always been a matter of serious concern, Dolly's birth has given rise to unique and distinctive ethical questions. From Mary Shelley's *Frankenstein* to Aldous Huxley's soulless *Brave New World*, through David Rorvik's spurious human clone,² the incessant realism of this blossoming technology constantly conjures up images of fear. The *bête noire* for the *Homo sapiens* is that in this neo-Genesis a new contender is likely to emerge on the scene: *Homo xeroxiens*, in his own image, of his own doing.

More than quarter of a century ago, Professor James Watson made a highly prognostic statement about the advent of cloned human beings. Writing in the *Atlantic Monthly*, he argued that cloning utilizes "nuclear transfer technology," which is a form of asexual reproduction. Unlike a twin, a clone will carry the genome of only one donor, or parent. Furthermore, whereas twins will be genetically identical and have the same genome, the clones will share only the same nuclear DNA; they will not also share the same mitochondrial DNA, as will twins.

...given the widespread development of the safe clinical procedures for handling human eggs, cloning experiments would not be prohibitively expensive. They need not be restricted to the super powers. All smaller countries now possess the resources required for eventual success. Furthermore, there need not exist the coercion of a totalitarian state to provide the surrogate mothers. There already are such widespread divergences regarding the sacredness of the act of human reproduction that the boring, meaninglessness of the lives of many women would be sufficient cause for their willingness to participate in such experimentation, be it legal or illegal. Thus, if the matter proceeds in its current non-directed fashion, a human being born of clonal reproduction most likely will appear on the earth within the next twenty to fifty years, and even sooner, if some nation should actively promote the venture.³

Notwithstanding the veiled misogynist tone of the above statement, Richard Seed, the daredevil physicist from Chicago, is out to fulfil Watson's prophecy. He sees his plan to produce cloned human beings on a commercial scale as some kind of communion with God: "I have said many times that you can't stop science. Cloning and the reprogramming of DNA is the first serious step in becoming one with God." On the other hand, neither do President Bill Clinton's remarks at announcement of cloning legislation:

Banning human cloning reflects our humanity. It is the right thing to do. Creating a child through this new method calls into question our most fundamental beliefs. It has the potential to threaten the sacred family bonds at the very core of our ideals and our society. At its worst, it could lead to misguided and malevolent attempts to select certain traits, even to create certain kind of children—to make our children objects rather than cherished individuals.⁴

Nor the first binding international ban on human cloning by thirteen members of the Council of Europe, as incorporated into the European Convention on Human Rights and Biomedicine (January 12, 1998), seem to deter Seed from his project on human cloning for he believes that "cloning is a part of fulfilling God's master plan."⁵

In many respects, Seed's proposal is analogous to the practice of assisted suicide by Jack Kevorkian, but diametrically opposite on a spectrum of life and death. Both have shown no interest in following any rules and laws and both are unconcerned about the ethical outcome of their work. Nonetheless, Seed's determination to defy the Federal ban on human cloning and move his paraphernalia to Mexico carries a clear echo of Watson's thoughts on poorer countries where economics allegedly defines the social acceptance of cloning.

Seed is not a lonely character bent upon turning his whims into a cloned reality. The mindless exploitation of cloning technology has found others with an explosive mix of fantasy, pseudo-science and religious myth.

The case in point is the Raelian Movement. According to the Raelian claim, earthly life is extraterrestrial in its origin and Elohim, the Hebrew Biblical God, carried out a cloning experiment for the resurrection of Jesus. They will offer "a service called Clonaid to provide assistance to would be parents willing to have a child cloned from one of them. This service offers a fantastic opportunity to parents with fertility problems, or homosexual couples to have a child cloned from one of them." The service will cost a hefty bill of \$200,000. That Dolly the sheep has provided a blueprint for successful human cloning, "Parents have the right to decide to have a baby who will bear the genetic code of one of them. It's now common to see the dead parent father a baby through the process of frozen sperm implantation. Imagine the joy of a widow raising a child looking like her beloved deceased husband," so goes the Raelian argument. Unmistakably, the Raelian is in cohort with both Watson and Seed in taking advantage of the economic and gender disparities abroad in their attempt to circumvent legal obstacles at home. In all these cases, extrapolation of the exploits of Dolly to human beings is a given.⁶

An outright ban on human cloning on the one hand and the opportunistic rush for commodification of the process on the other, may appear to belie cloning as a legitimate scientific pursuit. On the contrary, the Dolly experiment has taken the cloning technique to unprecedented heights. At least three possible breakthroughs may be identified:

1. asexual replication as a complement to the age-old (sometimes boring) sexual reproduction;
2. production of multiple genetically identical offspring; and
3. genetic predetermination of an offspring.

The possibility that these innovations may one day become a reality partly explains both the qualms about cloning and profit-motivated attempts at its commodification.

Gene cloning has been in vogue for more than quarter of a century. This has been accomplished by propagating small strands of DNA outside the organism. Similarly, cell cloning and cell cultures are established biological practices. Irrespective of their contribution to the advancement of biotechnology, however neither gene nor cell cloning gives us the capability to reconstitute a whole organism. Notwithstanding plant

regeneration from small parts, perhaps the only such exception in animals is the generation of whole frogs from three-day old embryonic DNA.

In case of Dolly, highly differentiated udder cells from an adult sheep were programmed to invoke a development sequence in the receptor cell, leading to her birth. That is what set this experiment apart from any previous cloning attempts. More good news comes from knowing that the state of cellular dedifferentiation was not specific to the adult udder cells. The non-specific nature of dedifferentiation is corroborated by another of Wilmut's successful cloning of lambs from fetal fibroblasts. At this stage though we are uncertain whether this technique can be applied to other species. Moreover, the technique itself remains highly labor-intensive: nearly three hundred nuclear transfers were required before a single, viable cloned individual could be produced.

The infantile state of this technique is not an absolute. With progress in biotechnology and legitimate monetary and political support, one is likely to witness its evolution to some degree of perfection. In our long-standing desire to produce genetically identical assemblage of animals with selected genetic traits, this technique offers promising results. One can make a cell into an instant flock or an instant herd."

Researchers in biotechnology may take comfort that nuclear transfer technique offers a great advantage over pronuclear injection for transgenic farm animals. Pronuclear injection requires implantation of 200-300 copies of selected genes into the fertilized egg with a rather poor outcome. Only 2-3% of the treated animals are transgenic and the added gene expression occurs only in a small proportion. Moreover, nuclear transfer makes it possible to delete or substitute specific genes and introduce changes in the genetic code at the single letter level.

These methodological ramifications of nuclear transfer and their real-time applications for both animal and human subjects are only beginning to unfold. For instance, animal models have served for long a useful purpose in finding solutions to human problems. The extrapolation of animal data to human subjects, however, has not been a complete success story. Nuclear transfer technique may provide greater flexibility in developing and implementing animal models. While the contribution of cloned plants and animals to human welfare is a foregone conclusion, speculations run high about cloned animals serving as a hedge against endangered species to organ farming for human use.

Similarly, the human scenario for the application of nuclear transfer and its derivatives seems to be incredibly vast. The immediate possibilities are seen in the pharmaceutical industry such as the production of human

therapeutic proteins, protein engineering for renal and cardiac transplantation, reversal of somatic mutations to counter aging and cancer, and cell therapy.

However, nuclear transfer seems to evoke more interest in social than medical or industrial arena, obviously due to the fact that attempts at mammalian cloning have met with success. Here fact and fiction mix to an unprecedented degree. Here we see a great interplay of forces of moral choices and freedom of thought and come to realize that advances in scientific and technical knowledge are creating a landscape where our traditional mores and morals are being put to a new test. In this unverified terrain of knowledge, our first defense seems to be the fear of the unknown. The ban on the use of nuclear transfer for possible human cloning is one such example of that fear. We are afraid that our social and family values would be eroded to the rise of a new brand of eugenics. We are concerned that this and related techniques would become a tool for the exploitation of fellow human beings. We are, in a sense, torn between the lure of benevolence and the evil lurking behind a technique of our own creation.

The most obvious justification for the human application of cloning technique could be in the alleviation of suffering caused by infertility. But reproductive technology in its bigoted, domineering, and misogynist role is never regressive. It can only act with a propulsive habit. Obviously then, short of any doomsday scenario, cloning has no other discretion except to evolve into a technique of greater instrumental value and refined efficacy.

The march of self-aggrandizing technology goes on. With every little innocent-looking discovery it reminds us that, the act of knowing is becoming contingent upon technology. Our knowledge-mediated behavior is, thus, reactive rather than incipient. Perhaps, the defining and enabling role of technology is an expedient prelude to the postmodern condition.

Cloning reinforces the values of genetic determinism because it poses a threat to individuality and diversity. It forecloses genetic variability. It betrays the double-edged sword of genetic determinism by showing that it can act first at the stage of conception and then be in hot pursuit of a deterministic nurturing. Here the good old nature-nurture debate is in for a real shock! In no small measure, genetic determinism is an anti-thesis of moral and ethical choice.

We are becoming increasingly familiar with shopping for commodities like blood, sperm, ovum, organs etc. Coming as a boost to consumer mentality, cloning gives new meanings to human body as merchandise.

Instead of staying contented with the parts, it would acquire novel techniques to act as a wholesaler for packaging and marketing of made-to-order clones. In its instrumental garb, cloning will become an agent of commercial exploitation very much like the rent-a-uterus syndrome that we suffer from. If success with the transgenic animals is any yardstick, then there is nothing whimsical about the idea of conducting business through a mail order catalog of genetic cartography.⁷

There is an inherent contradiction in human cloning: the very process is an exercise in dehumanization. By negating inviolability of the human body, cloning is an intrusion into the *primum mobile* of the genetic ecosystem. Even in the primordial experiment, not much was accomplished without introducing synthetic elements. The vigor of this invasive procedure will only be enhanced by an awesome command of parallel computing power augmented by genetic cartography. There are little barriers to an explosive mix of computers and biology in the service of cloning.

Is our body only a bundle of genes, tissues and, organs? What is a person? A body? What is the essence of owning a body? What is that quintessence that gives us an intensely personal experience of bodily pleasures? In this Cartesian (?) duality of body vs. person, how far one can go in denying existential identity vis-à-vis its proximity with the organic composition?

Cloning brings us back to these age-old questions, but in a new mold. Here cloning acts as a broker of genetic determinism for an entity that is yet to be composed of a body and a person. Here it is an ontological onslaught on the personhood. While cloning cannot replenish the nurturing component, it imposes a deterministic blueprint of bodily development.

At this point, the much-contested debate on parental rights vs. fetal rights comes into focus. The issue does not rest with the basics of earliest stages of embryonic development but gets murkier—very much like the laminated darkness of the uterus—when the long arm of in-utero genetic manipulation takes its lead. For instance, we can be nothing but mute over the risk of inherited disorders and the ability to fight disease in a person born of a frozen-and-thawed cloned embryo...*ad infinitum*. Moreover, do parents have a right to deliberately alter the genetic endowment of a future child? Can she/he make a retroactive claim for damages inflicted through pre-birth genetic brokerage? Given our technology-contingent knowledge, moral and ethical reasoning and decision-making finds itself aphonic.

True to the spirit of the Greek tragedy, the Hellenistic outlook

described body as a dungeon of the soul. The Christian reflection elevated it to the status of a sanctuary but repudiated bodily pleasures in favor of things spiritual: celibacy is a classic example. Does cloning then represent an embodiment of some cognitive vestige from the Hellenistic culture that blends with the onus of the "original sin?" Is it the malevolence of the rebellious? Is it the vengeful self-perpetuation of the defiant? However comforting the Papal denunciation of cloning may be in the interest of reverence of the body, the fact remains that science is not free from its cultural embedding. The insurgence goes on, albeit on a different note.

In the Muslim consciousness, free from the inherent guilt, the body is, in a sense, an *axis mundi*. It is the medial where the worlds, corporeal and spiritual, meet. In spite of a synoptic perspective on the human body, there is neither an idea of "rights" over one's body nor an "ownership" of the body in the Western sense of the words. For a Muslim, body is a trust from God. It is neither a solely owned property nor a disposable commodity. Hence the interdiction against suicide. The temporary possession of the body does not imply its ownership by the possessor. The ritual prayer from the Qur'ān that one recites at the death of a person comes as a vivid reminder: "He alone grants life and takes it out; and unto Him you all must return" (10:56).

Notwithstanding some Muslims whose mislaid zeal appears to portray the Qur'ān as a book of human embryology, there are verses aplenty that point to a normative (emphasis added) guidance on human creation. Let us read a sample:

We have created you out of dust, then out of a drop of sperm, then out of a germ-cell, then out of an embryonic lump complete [in itself] and yet incomplete, so that We might make [your origin] clear unto you. And whatever We will [to be born] We cause to rest in the [mother's] wombs for a term set [by Us]. (22:5).

Another verse reads:

Was he not once a [mere] drop of a sperm that had been split, and thereafter became a germ-cell—whereupon He created and formed [it] in accordance with what [it] was meant to be, and fashioned out of it the two sexes, the male and the female?" (75:37-8).

The Qur'anic paradigm of human creation, it would appear, preempts any move towards cloning. From the moment of birth to the point of death, the entire cycle is a Divine act. The humankind is simply an agent, a trustee of God and the body a trust from God. As such, any replication is simply a redundant act. In the absence of a Qur'anic axiom on body as property, genetic policing would appear to be quite unethical.

On the utilitarian side of the corporeal possession, Muslims are exhorted—as a ritualistic obligation—to keep this trust in good shape. Given that cloning is an asexual experience (in the sense that it is performed within the legal marital bonds; no extramarital genetic boundaries are crossed and; the genetic endowment is only from the spouses), its prohibition must be judged against Islamic ethical norms. For instance, unlike Catholic strictures, Islam sanctions therapeutic abortion in case of genuine clinical condition i.e., imminent danger to mother's life. Would cloning offer an analogous condition? We can think of only one possible scenario: pre-natal corrective genetic intervention, provided a clinical justification exists. Our reasoning for this assertion takes root in the body-as-a-trust paradigm and the ensuing responsibility for its care as the duty of every Muslim woman and man.

Cloning, as an enabling technology, is radically unique in its manipulation of life itself. No other scientific or technological course of knowledge has such a great proximity to life. Is cloning then going to be the agent provocateur for our moral and ethical discourse? Is it likely to assume the attributes and powers of an ontological agent?

The ontological assault of science seems to have commenced with the allegedly beneficent conclusion of the "test-tube baby." It gave us our first lesson in ontological moralizing influence of science. It achieved human reproduction *sans* sexual intercourse. This was antecedent to sexual and reproductive mores humankind has known across cultures for centuries, the Immaculate Conception notwithstanding. Later, coming in the wake of recombinant DNA technology and cryogenics, the derivative knowledge from this technique flourished to give us a host of new concepts and practices. Surrogacy came to be practiced, with several variations on the theme. Similarly, fetal genetic engineering and sex pre-selection came to the forefront. In addition, older issues such as "life," induced abortion, consciousness, and personhood acquired completely new semantic values.

The development of Gametic Intra-follicular Transfer (GIFT), for instance, is a classic example of a moral urgency prompted by the new reproductive technologies. In order to fulfill the Catholic obligation to stay "close" to Nature, GIFT offered an alternative to In-Vitro Fertilization (IVF) in the sense that GIFT-assisted fertilization occurred where Nature has ordained it to be, in contrast with the IVF procedure. However, it is doubtful if the same sort of barricades could be erected to fend off scientific "intrusions" into many other human precincts.

In the context of moral impingement by new reproductive technologies, GIFT is only the tip of the iceberg. We are increasingly finding ourselves

surrounded by a multitude of moral predicaments. The "property" paradigm of gametes, pre-implantation of genetic biopsies, cloning of cells of human origin, and germ-line cell therapy are some of the perplexing issues facing us. Not to speak of concerted attempts to rejuvenate the evil monster of eugenics (Muller's Germinal Repository in Escandido, California, is a case in point, among others), and racial and gender bigotry perpetuated through sociobiological predisposition. Thus, it is not only the ontological dimension of science that spells danger for the received moral and ethical code but the potential that exists for the social abuse of technological prowess.

The ontological moralizing influence of science is making knowledge contingent upon the "technique." That is to say that the "technique" is becoming antecedent to the art of knowing. To illustrate, we may return to the case of the "test tube baby." Before Edwards and Steptoe's work on IVF, our legal and moral codices were totally alien to social, psychological, political, economic, or even religious dimensions of such actions. Once the silence was broken, we were dumbfounded.

This paradigm of contingency may be extrapolated to several other areas. For instance, at the time of discovery of the molecular structure of DNA, we did not have the inkling that this will one day lead to a multi-billion dollar enterprise: Human Genome Project. At this point, one should have a guarded view of these developments. There must be a fine line between how scientific and technological progress interacts or conflicts with a given value system vis-à-vis prompting our ingenuity to carve new moral and ethical guidelines for a virgin cognitive landscape. Because the "technique" creates a phenomenon for which moral and ethical precedents are absent, it obviously comes to possess an ontological advantage. At the same time, the existential nature of the "technique" gives it the instrumental contingent. This, in essence, is what we mean by the contingency of knowledge.

The pre-immanence of science and technology, in relation to the ethical-moral status quo is a fertile ground for the development of new cognitive niches. Is it possible that scientific dynamism would, one day, override a static ethical-moral code? That the cognitive substratum for moral action would become more and more contingent upon our scientific "literacy?" That moral action would simply be an extension of our scientific output? Whether there would be a multi-processor-based metaphysics or the received text would reign supreme are questions that we ought to think about.

Notes

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