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ETHICS AND CLONING

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Short title

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Structured abstract

Scientists have cloned animals since the late nineteenth century, but the crucial step for ethics was the cloning of the first mammal by somatic cell nuclear transfer in 1997. This suggested that scientists could also clone, and possibly enhance, human beings. The one ethical area of agreement in this issue is that we should not try to create new human beings by somatic cell nuclear transfer now. Ethicists disagree, however, on what justifies this norm. Some appeal to preference satisfaction and freedom from external constraints, others question this approach by more profound religious and moral considerations. The same arguments have been in use since the 1970s, so philosophers should prepare deeper analyses before the issue surfaces again.

Key words

cloning – ethics – preferences – freedom – design – reproduction
BACKGROUND

Cloning in science and science fiction

Cloning in the context of medicine, biotechnology, and molecular biology means the production of entities, individuals, and populations that are genetically identical or near identical with the original organism or part of an organism from which they are derived. In its spontaneously occurring form, cloning is the way in which bacteria and several plants and animals reproduce asexually.

The earliest recorded scientific experiments in cloning animals are from the nineteenth century and involved frogs, sea urchins and salamanders. Scientists believed that each cell division results in two new cells that have only half of the genetic material of the original. Experiments with frog embryos seemed to confirm this. When researchers burned one embryonic frog cell after the first division, the other cell only developed into half a frog. However, parting sea urchin cells at the same stage produced two complete sea urchins. The same happened with salamanders, and further observations showed that, at some point, later divisions did in fact result in the emergence of more specialised tissue instead of entire copies of the original individual.

The word “clon” (without the “e”, from the Ancient Greek word for “twig”) was devised in the early twentieth century by plant physiologist Herbert Webber, who wanted to have a good name for the method of taking a graft of a plant and then making it grow another, genetically identical plant. The word caught on in agriculture, but the notion gained even wider popularity through science fiction, as many authors extended the idea from plants to making copies of human beings. One of the most influential books of this kind has been Aldous Huxley’s Brave New World, published in 1932. The story involves cloning humans by embryo splitting (in the book, “Bokanovsky’s Process”): causing fertilised human eggs to divide and creating (in the book masses of) identical genetic copies. Although cloning is not crucial to Huxley’s dystopia, which works mainly by conditioning and pleasure control, the imagery of copying humans that he offered has been central in later ethical debates.

Politically oriented science and science fiction intertwined in discussions that preceded late-nineteenth-century developments in molecular biology. Huxley’s brother Julian, a biologist, was heavily involved in the eugenic movement and provided, no doubt, insights to the Brave New World. Huxley was also influenced by J.B.S. Haldane, another biologist, and especially by his 1924 book Daedalus; or, Science and the Future, an early vision of transhumanism, or humankind taking control over evolution by biology. Haldane went on, in his 1963 speech “Biological possibilities for the human species of the next ten thousand years”, to introduce to the scientific community the word “clone” (now “e” included) to denote the creation of super-humans by genetic cloning and enhancements. Appropriately, Haldane stressed in his contributions that the advances he outlined could go horribly wrong unless we develop a robust ethics to match them.

Early ethical considerations

Ethicists joined the discussion after John Lederberg, a Nobel Laureate for Physiology or Medicine, advocated in a 1966 article cloning and genetic engineering as appropriate means to improve the human race. Two Protestant theologians were among the first to react – Paul Ramsey and Joseph Fletcher.

Ramsey condemned cloning and adjacent genetic alterations, because he saw that they threaten Christian views on human happiness, morality, personhood, power, and procreation. They make happiness seem as an individual experience, although we should define it as a good moral life in a loving family. They turn morality into individual-centred calculations,
although it should be a social enterprise. They see personhood as disembodied and abstract, although it is embodied and sexual. They regard power primarily as a struggle against natural forces, although it is one group’s dominance over others. And they reduce procreation to reproduction by perceiving children as projects and products instead of gifts.\(^5\)

Fletcher took the diametrically opposite view to Ramsey’s, and argued that humankind would be better off replacing the clumsy traditional way of making babies and the ensuing genetic roulette by well controlled cloning and genetic engineering. Happiness consists of the preference satisfaction of individuals; and the individual’s freedom to do what one wishes is paramount. We should only curtail freedom if others would, without restrictions, come to harm’s way. Persons are rational beings who can choose and control their environment by their choices; and our moral aim is to maximise our personal well-being and the well-being of others. Parenting is a social, not a biological activity; and power over nature, including our own reproduction, is science’s gift to us.\(^6\)

As reproductive medicine and molecular biology advanced, the first child initiated by in vitro fertilisation was born in 1978 at Royal Oldham Hospital, United Kingdom; and researchers succeeded in blastomere separation, or blastomere cloning, in 1993 at George Washington University, United States. Science fiction remained firmly in the picture, with David Rorvik’s *In His Image*, published in 1978. Rorvik, a science writer, claimed that he had been a part of a clandestine project to clone a human being, and although experts believe that the book is a hoax, the idea sat deeply in the popular imagination. Theologians, now including Protestants and Catholics as well as Jewish and Islamic thinkers and representatives of other faith traditions continued to keep the issue on the agenda. Their assessments ranged from Buddhist, Catholic, and Conservative Protestant condemnation to Hindu, Jewish, and Moderate Protestant caution.\(^7\)

Secular philosophers warmed up to the discussion mainly as critics of the critical theological views. In a prescient 1982 contribution, British philosopher Ruth Chadwick listed the main objections to cloning, addressed, and refuted them from a preference utilitarian point of view.\(^8\) The arguments she tackled concerned unnaturalness, functioning, playing God, rights to genetic uniqueness and privacy, worthwhile lives, preferences, and side effects to society and to the gene pool. On the surface, Chadwick considered none of these unduly alarming. According to her, unnaturalness is a philosophically dead concept; cloned humans could function just fine; accusations of playing God can be replaced by risk assessment; identical twins prove that genetic uniqueness is not always essential; our genetic constitution can become known in other ways; we may or may not prefer to be genetically unique (especially when the alternative is that we do not exist at all); side effects to society need not be so bad; and the impact on the gene pool could probably be controlled.

Chadwick’s list has ever since constituted the core of the standard utilitarian “frequently asked questions and answers” pattern on cloning and other emerging technologies. Authors from different schools of thought can challenge such observations,\(^9\) but the stance within the utilitarian tradition has been unshaken. This is why the truly interesting details of Chadwick’s contribution are in the snide remarks she makes against the unquestioned utilitarian confidence in technology. These touch upon worthwhile lives and possible side effects to society, individuals, and the gene pool. Preference utilitarians who want to maximise worthwhile lives are logically committed to the view that we have a duty to turn as many somatic cells as we can into new human beings. This seems a stretch. Moreover, detrimental impacts on society are, if not inevitable, still possible. The industrial production of lower-class citizens, the potentially reduced self-esteem of cloned individuals, and the effects of mass cloning on the gene pool are matters that should be reflected on carefully, not just ignored in the hope that everything will be fine.\(^10\) A thorough risk assessment of cloning combined with genetic engineering would be a start, although philosophers are also becoming
increasingly aware of a need to involve citizens in such evaluations, and subsequent decisions.  

AN AREA OF RELATIVE AGREEMENT

The next scientific milestone was the successful cloning of the first mammal by somatic cell nuclear transfer at the Roslin Institute in Scotland. Researchers removed the nuclei of 277 sheep’s ova and fused the ova with mammary gland cells from other sheep. They managed to get 29 embryos growing, and implanting these to surrogate mother sheep resulted in 13 pregnancies. One pregnancy was carried to term, and a healthy lamb, Dolly, was born on 5 July 1996.  

Something must have been brewing underneath the surface, because what happened after the Dolly news broke in 1997 was unprecedented. In the ensuing regulative turmoil, the United Nations Educational, Scientific and Cultural Organization (UNESCO) immediately banned cloning; 13 during the next year Argentina, Austria, Brazil, Denmark, Georgia, Germany, Iceland, Mexico, Norway, Peru, Slovakia, Spain, South Africa, and the United Kingdom had introduced similar bans; and in a few years’ time at least 30 countries had followed suit.  

Two observations make this ethico-legal development remarkable. First, the entire commotion started with the cloning by nuclear transfer of a nonhuman mammal, an innocuous procedure that has raised no further concerns. After Dolly, scientists have cloned at least cows, mice, rats, goats, pigs, rabbits, cats, horses, and dogs by the same method, largely without a raised eyebrow. This indicates that the problem cannot be in the use of nuclear transfer as such. Secondly, researchers have cloned human beings by embryo splitting to create better methods of artificial reproduction, and this work has received the blessing of the Ethics Committee of the American Society for Reproductive Medicine. 15 More embryos implanted into the womb increase the chances of a successful pregnancy. The acceptance of this practice by a respected ethical authority suggests that the problem cannot always be the duplication of human beings as such, either. Since the ethical issue exists, however, its core must be in the combination: human beings produced by nuclear transfer. This, somehow, is the justification of the downright bans, instead of moratoria (which are more common in the case of emerging technologies). How exactly, though?  

The answer could be that we all wish to prevent the reckless technological design and production of human beings, although the reasons for our wishes may vary considerably. Utilitarians can argue, and many did just after Dolly, that cloning human beings by nuclear transfer is, for the time being, too dangerous, and that we should not attempt it before we know more about the process. Ethicists from other schools of thought have maintained, among other things, that cloning violates our dignity, uses people as means, affronts our uniqueness, 16 and threatens our humanity. 17 The “recklessness” of the procedure is in one tradition interpreted as a matter of risk on physical well-being, and in others as an offence against fundamental moral principles. Add to this that utilitarians root for a moratorium (at best), while many others champion a categorical, complete and interminable prohibition, and the narrowness of the agreement becomes clearly visible. Everything else in the matter is controversial.
AREAS OF CONTROVERSY

The central issues

To be clear, then, the most dramatically contested area here is the cloning of human beings for reproductive purposes, i.e. for making babies who grow up to be fully-grown adults and fully-fledged members of their societies. Research on human embryos, including nuclear transfer clones, is widely allowed for fourteen days after conception; and the subsequent cultivation and scientific and therapeutic use of human embryonic stem cells is in most countries (not all) accepted. Human reproduction is at the heart of the cloning issue, ethically speaking, with the ideas of design and the historically ever-popular theme of enhancing individuals and improving the human race.

Asexual reproduction and distorted families

Leon Kass, a conservative American ethicist, asserted in 1998 that cloning is wrong, because it distorts family relationships and our sense of human dignity. Apart from the spontaneous disgust that we feel when we think about unnatural ways of making babies, we have good grounds for rejecting cloning as an asexual form of procreation. The continuous renewal of humanity, according to Kass, relies on heterosexual families and children born as an intended outcome of sex between men and women. Organisms that reproduce asexually are selfish and only concerned with passing on their own genome as a whole. Human beings, in contrast, engage in (hetero)sexual activities for different motives. Men and women come pleasurably together to mix their genomes and to bring about new life that is not identical with theirs. Their own inimitable genome as such dies in the process, but something more important is born: another unique member of the human family that can be taught the ways and faith of its parents and community. Human cloning as an asexual method of creating progeny would distort the sense of family and natural relationships within it. Cloning would irrevocably confuse the essential concepts of being a mother, a father, a child, an aunt, an uncle, and so on, and humanity as we know it would come to its end.

Kass has attracted criticisms from many angles, including appeals to utility, rights, and duties. A fresh approach came in 2006 from Victoria Davion, who objected to Kass-type reasoning from an ecofeminist point of view. Her main problem with arguments allegedly based on “spontaneous disgust” and “natural sentiments” was that these feelings are not in fact instincts, but socially constructed intuitions; in the case of cloning, homophobic ones. It is easy to see that see had a point just by looking at the language used by Kass: women, men, and sex aimed at having children and raising them in a good mother-father family, surrounded by a traditional heteronormative community. Davion herself also rejected cloning, although “naturalness” was not the reason. According to her, it would be yet another method for “wealthy white heterosexual people to reproduce themselves.”

Design, control, deformed societies, and confused humanity

Michael Sandel, a philosopher who usually attracts the epithet “communitarian”, thinks that cloning is wrong, because it could be the final blow against solidarity in our contemporary societies. If we allow parents to choose their children and their children’s qualities, which is obviously the case in cloning, they will have expectations and a sense of control over their reproductive endeavours. They will see their offspring as a designed object rather than a gift. The gift aspect, or the “given” in our lives, is, however, essential for our fellow feeling, Sandel believes. As long as we recognise that not everything is in our control, we remain
committed to mutual help. The more we see ourselves as masters of our own, and our children’s, lives, the less we care about solidarity.

Jürgen Habermas, a philosopher better known for his theory of communicative action, argues ominously that cloning would spell the end of humanity. He argues that apart from being free, autonomous, choice-making individuals with a great deal of self-awareness, we are also partly mysteries to ourselves and others, because we have a “grown”, “given”, or “gift” element that defines us as much as our conscious decisions and actions. Our belief in freedom, equality, and democracy is based on this duality. We treat each other equally, because no one is anybody else’s master or maker, and no one knows exactly what the other is. Habermas thinks that with cloning and genetic engineering this would change. Clones would “be known” to their makers, and could not be their equals in the way that is required for the meeting of peers in democratic decision-making. Cloning would end the progress towards freedom and democracy that we (Habermas seems to mean primarily European and related cultures) have enjoyed for two and a half millennia, and in this sense mark the end of humanity.27

Improving the human race

Many liberal and utilitarian thinkers contested at the turn of the twenty-first century the new conservative objections as scaremongering and mumbo jumbo. Their counterarguments mostly followed the patterns outlined by Fletcher and Chadwick earlier: preferences should be satisfied, individual freedom should not be restricted, social problems are manageable or not caused by genetics, and appeals to “naturalness”, “the given in human lives”, and the like are expressive nonsense and have no place in rational ethics.28 29 30 31 32 The interesting development, though, was the increasing insistence on our positive duty to improve the lot of humanity by emerging technologies.

Allen Buchanan, Dan Brock, Norman Daniels, and Daniel Wikler, all influential American bioethicists, drew attention to the fact that failing to use genetic engineering leaves humankind at the mercy of natural chance.33 Their most interesting suggestion concerned justice. Theories of justice have usually proceeded from the assumption that human nature is unchangeable. The task of the theories has been to work out fair, equitable, sensitive, and effective ways of distributing and redistributing well-being, liberties, rights, and obligations within the limits set by the unchangeable human nature. Buchanan, Brock, Daniels, and Wikler proposed, however, that with all the new opportunities provided by advances in gene technology, we could actually change the premises by developing our genetic and biological constitution in a beneficial and responsible way. In addition to asking, what kinds of rules should we have for humans, we should ask, what kinds of humans should we have? Unsurprisingly, the more conservative thinkers did not salute the proposal that they saw as a call to a new kind of eugenics.

THE WAY FORWARD

The arguments for and against cloning, especially the reproductive cloning of human beings by somatic cell nuclear transfer, have not evolved since the 1997-2007 debates that followed the birth of Dolly. Even then, they were mostly reiterations of earlier clashes between the liberals and the conservatives in the 1960s and 1970s.34

As science advances, ethicists and theologians will return to cloning again. At some point, scientists in some laboratory will allow human clones to develop beyond the regulated fourteen days, report it, and the news will stir a renewed confrontation. Synthetic biology will in the future make possible attempts to create entities that resemble human embryos so
closely that this will raise an uproar. Some currently unforeseeable developments will also occur, producing scandals and the ethical re-invention of the old arguments.

In the meantime, philosophical ethicists would use their time well by proceeding to the questions that they have flirted with in the past but seldom seriously addressed. Three general themes stand out. (1) Risk assessment. We should try to conduct a full examination of the benefits and harms of cloning in its various forms, and their probabilities. This can be an impossible task, but if so, we would at least know that utilitarian arguments appeal to hopes and fears rather than concrete assessments of well-being. (2) Justice. Critical appraisals of cloning often mention, in passing, that it would have value for so few people that it is not worth the investment. This may be true, but we should examine cloning in the light of many theories of justice, not just the liberal model employed by Buchanan, Brock, Daniels, and Wikler. (3) Meanings. We should study carefully what words and phenomena mean, as Davion did with unnaturalness. What does it mean to have dignity, to be cautious, or to have solidarity? Some answers to these questions exist, but deeper analyses would be useful for future discussions.

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