WHOSE SELF IS IT, ANYWAY?

When would human cloning be a morally acceptable choice, and when a mere exercise in vanity? Would it always transgress Kant's injunction to treat others as ends in themselves?

BY PHILIP KITCHER

In April 1988 Abe and Mary Ayala of Walnut, California, began living through every parent's nightmare: Anissa, their sixteen-year-old daughter, was diagnosed with leukemia. Without a bone-marrow transplant, Anissa would probably die within five years. But who could donate bone marrow that Anissa's immune system would not reject? Tests confirmed the worst: neither Abe, Mary nor their other child had compatible marrow.

The family embarked on a desperate plan. Abe, who had had a vasectomy years before, had it surgically reversed. Within months, at the age of forty-three, Mary became pregnant. The genetic odds were still three-to-one against a match between Anissa's bone marrow and that of the unborn child. The media got hold of the story, and the unbearable wait became a public agony.

Against all the odds a healthy daughter was born with compatible bone marrow. Fourteen months later, in June 1991, physicians extracted a few ounces of the child's marrow: the elixir that would save her older sister's life.

The story has a happy ending, but many people have found it at least slightly disturbing. Is it right for a couple to conceive one child to save another? Can someone brought into the world for such a well-defined purpose ever feel that she is loved for who she is? Thirty-seven percent of the people questioned in a contemporaneous Time magazine poll said they thought what the Ayalas had done was wrong; 47 percent believed it was justifiable.

Six years have passed and now a different, yet related, event a continent away has shaken the public's moral compass. Lamb number 6L3, better known as Dolly, took the world by surprise last February when she was introduced as the first creature ever cloned from an adult mammal. Recognizing that what is possible with sheep today will probably be feasible with human beings tomorrow, commentators speculated about the legitimacy of cloning a Pavarotti or an Einstein, about the chances that a demented dictator might produce an army of supersoldiers, about the future of basketball in a world where a team of Larry Bird's could play against a team of Michael Jordans. Polls showed that Mother Teresa was the most popular choice for person-to-be-cloned, but the film star Michelle Pfeiffer was not far behind. And Bill and Hillary Clinton, though tainted by controversy over alleged abuses of presidential power, also garnered some support.

Beyond all the fanciful talk, Dolly's debut introduces real and pressing moral issues. Cloning will not enable anyone to duplicate people like so many cookie-cutter gingerbread men, but it will pave the way for creating children who can fulfill their parents' preordained intentions. Families in the Ayala's circumstances, for instance, would have a new option: Clone their dying child to give birth to another whose identical genetic makeup would guarantee them a compatible organ or a tissue match. Should they be allowed to exercise that option? The ethical implications of cloning balance on a fine line.

Society can probably blame Mary Wollstonecraft Shelley and her fervent imagination for much of the brouhaha over cloning. The Frankenstein story colors popular reception of the recent news, fomenting a potent brew of associations: many people assume that human lives can be made to order, that there is something vaguely illicit about the process, and, of course, that it is all going to turn out disastrously. Reality is much more complicated—and more sobering—so one should prefence debates about the morality of human cloning with a clear understanding of the scientific facts.

As most newspaper readers know by now, the recent breakthroughs in cloning did not come from one of the major centers of the genetic revolution, but from the far less glamorous world of animal husbandry and agricultural research. A team of investigators at the Roslin Institute, near Edinburgh, Scotland, led by Ian Wilmut, conjectured that past efforts to
clone mammals had failed because the cell that supplied the nucleus and the egg that received it were at different stages of the cell cycle. Applying well-known techniques from cell biology, Wilmut “starved” the cells so that both were in an inactive phase at the time of transfer. Inserting nuclei from adult sheep cells in that quiescent phase gave rise to a number of embryos, which were then implanted into ewes. In spite of a high rate of miscarriage, one of the pregnancies continued to term. After beginning with 277 transferred adult nuclei, Wilmut and his coworkers obtained one healthy lamb: the celebrated Dolly.

Wilmut’s achievement raises three important questions about the prospect of human cloning: Will it be possible to undertake the same operations on human cells? Will cloners be able to reduce the rate of failure? And just what is the relation between a clone obtained through nuclear transplantation and the animals, born in the usual way, from which the clone is derived?

Answers to the first two questions are necessarily tentative; predicting even the immediate trajectory of biological research is always vulnerable to contingencies. In the late 1960s, for example, after the developmental biologist J.B. Gurdon, now of the University of Cambridge, produced an adult frog through cloning, it seemed that cloning all kinds of animals was just around the corner; a few years later, the idea of cloning adult mammals had returned to the realm of science fiction [see “The Birth of Cloning,” by J.B. Gurdon, page 26]. But leaving aside any definite time frame, one can reasonably expect that Wilmut’s technique will eventually work on human cells and that failure rates will be reduced.

What about the third question, however, the relation between “parent” animal and clone? There one can be more confident. Dolly clearly has the same nuclear genetic material as the ewe that supplied the inserted nucleus. A second ewe supplied the egg into which that nucleus was inserted; hence Dolly’s mitochondrial DNA came from another source. Indeed, though the exact roles played by mitochondrial DNA and other contents of the cytoplasm in vertebrate development are still unclear, one can say this much: Dolly’s early development was shaped by the interaction between the DNA in the nucleus and the contents of the egg cytoplasm—the contributions of two adult females. A third sheep, the ewe into which the embryonic Dolly was implanted, provided Dolly with a uterine environment. Dolly thus has three mothers—nuclear mother, egg mother and womb mother—and no father (unless, of course, one accords that honor to Wilmut for his guiding role).

Now imagine Holly, a human counterpart of Dolly. You might think Holly would be similar to her nuclear mother, perhaps nearly identical, particularly if the mother of the nuclear mother were also the womb mother, and if either that woman or the nuclear mother were the egg mother. Such a hypothetical circumstance would ensure that Holly and her donor shared a similar gestation experience, as well as both nuclear and mitochondrial DNA. (Whether they would share other cytoplasmic constituents is anyone’s
**Most cloning scenarios** are morally repugnant, not because cloning

guess, because the extent of the differences among eggs from a single donor is still unknown.)

But even if all Holly’s genetic material and her intrater-
one experience matched those of a single donor, Holly
would not be an exact replica of that human being. Per-
sonal identity, as philosophers since John Locke have rec-
nocized, depends as much on life experiences as on genetics. Memories, attitudes, prejudices and emotional
attachments all contribute to the making of a person.
Cloning creates babies, not fully formed adults, and babies
mature through a series of unique events. You could not
hope to ensure the survival of your individual conscious-

![Carole Berman, The Three Sisters, 1996](image)

ness by arranging for one of your cells to be cloned. Mega-
lomaniacs with intimations of immortality need not apply.

Other environmental factors would also lead to differences
between Holly and her donor. For one thing, the two would
likely belong to different generations, and the gap in their
ages would correspond to changes in educational trends, the
adolescent subculture and other aspects of society that affect
children’s development. Perhaps even more important, Holly
and her donor would be raised in different families, with
different friends, close relatives, teachers, neighbors and men-
tors. Even if the same couple acted as parents to both, the
time gap would change the familial circumstances.

Identical twins reared together are obviously similar in
many respects, but even they are by no means inter-
changeable; for instance, 50 percent of male identical twins
who are gay have a twin who is not [see “Whenever the
Twin Meet,” by Thomas J. Bouchard Jr., page 52]. Small
differences in shared environments clearly play a large role.
How much more dissimilarity, then, can be anticipated,
given the much more dramatic variations that would exist
between clones and their donors?

**There will never be another you.** If you

hoped to fashion a son or daughter exactly in
your image, you would be doomed to disap-
pointment. Nevertheless, you might hope to take advan-
tage of cloning technology to have a child of a certain kind—
after all, the most obvious near-term applications for
cloning lie in agriculture, where the technique could be
used to perpetuate certain useful features of domestic ani-
mals, such as their capacity for producing milk, through
succeeding generations. Some human characteristics are
directly linked to specific genes and are therefore more
amenable to manipulation—eye color, for instance. But in
cloning, as in a good mystery novel, nothing is quite as
simple as it seems.

Imagine a couple who are determined to do what they
can to create a Hollywood star. Fascinated by the color of
Elizabeth Taylor’s eyes, they obtain a tissue sample from the
actress and clone a young Liz. Will they succeed in creating
a girl who possesses exact copies of the actress’s celebrated
eyes? Probably not. Small variations that occur at the cel-

dular level during growth could modify the shape of the girl’s
eye sockets so that the eye color would no longer have its
bewitching effect. Would the Liz clone still capture the hearts
of millions? Perhaps the eyes would no longer have it.

Of course, Taylor’s beauty and star appeal rest on much
more than eye color. But the chances are that other physi-
cal attributes—height, figure, complexion, facial fea-
tures—would also be somewhat different in a clone. Eliz-
abeth II might overeat, for instance, or play strenuous sports,
so that as a young adult her physique would be fatter or
leaner than Elizabeth I’s. Then there are the less tangible
attributes that contribute to star quality: character and per-
sonal style. Consider what goes into something as appar-
ently simple as a movie star’s smile. Capturing as it does
the interplay between physical features and personality, a

![image]

smile is a trademark that draws on a host of factors, from
jaw shape to sense of humor. How can anything so subtle
ever be duplicated?

Fantasies about cloning Einstein, Mother Teresa or Yo-
Yo Ma are equally doomed. The traits people value most
come about through a complex interaction between geno-
types and environments. By fixing the genotype one can
only increase the chances—never provide a guarantee—of
achieving one’s desired results. The chances of artificially
fashioning a person of true distinction in any area of com-
plex human activity, whether it be science, philanthropy
or artistic expression, are infinitesimal.

Although cloning cannot produce exact replicas or guar-
antees outstanding performance, it might be exploited to
create a child who tends toward certain traits or talents. For
example, had my wife and I wanted a son who would domi-
nate the high school basketball court, we would have been
ill-advised to reproduce in the old-fashioned way. At a com-
bined height of just over eleven feet, we would have dra-
matically increased our chances by having a nucleus trans-
ferred from some strapping NBA star. And it is here, in the
realm of the possible, that cloning scenarios devolve into
moral squalor. By dabbling in genetic engineering, parents

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would be demonstrating a crass failure to recognize their children as independent beings with the freedom to form their own sense of who they are and what their lives mean.

Parents have already tried to shape and control their children, of course, even without the benefit of biological tools. The nineteenth-century English intellectual James Mill had a plan for his son's life, leading him to begin young John Stuart Mill's instruction in Greek at age three and his Latin at age eight. John Stuart Mill's *Autobiography* is a quietly moving testament to the cramping effect of the life his eminent father had designed for him. In early adulthood, Mill's suffered a nervous breakdown, from which he recovered, going on to a career of great intellectual distinction. But though John Stuart partly fulfilled his father's aspirations for him, one of the most striking features of his philosophical work is his passionate defense of human freedom. In *On Liberty* he writes: "Mankind are greater gainers by suffering each other to live as seems good to themselves, than by compelling each to live as seems good to the rest."

*If the Cloning of Human Beings is Undertaken in the Hope of Generating a Particular Kind of Person, Then Cloning is Morally Repugnant. The Repugnance Arises Not Because Cloning Involves Biological Tinkering but Because It Interferes with Human Autonomy. To Discover Whether Circumstances Might Exist in Which Cloning Would be Morally Acceptable, One Must Ask Whether the Objectionable Motive Can Be Removed. Three Scenarios Come Immediately to Mind.*

First is the case of the dying child: Imagine a couple in a predicament similar to that of the Ayulas, which I described at the beginning of this essay. The couple's only son is dying and needs a kidney transplant within ten years. Unfortunately, neither parent can donate a compatible organ, and it may not be possible to procure an appropriate one from the existing donor pool. If a brother were produced by cloning, one of his kidneys could be transplanted to save the life of the elder son.

Second, the case of the grieving widow: A woman's beloved husband has been killed in an automobile accident. As a result of the same crash, the couple's only daughter lies in a coma with irreversible brain damage. The widow, who can no longer bear children, wants to have the nuclear DNA from one of her daughter's cells inserted into an egg supplied by another woman, so that a clone of her child can be produced through surrogate motherhood.

Third, the case of the loving lesbians: A lesbian couple wishes to have a child. Because they would like the child to be biologically connected to each of them, they request that a cell nucleus from one of them be inserted into an egg from the other, and that the embryo be implanted in the uterus of the woman who donated the egg.

No blatant attempt is made in any of these scenarios to direct the child's life; indeed, in some cases like these cloning may turn out to be morally justified. Yet lingering concerns remain. In the first scenario, and to a lesser extent in the second, the disinterested bystander suspects that children are being subordinated to the special purposes or projects of adults. Turning from John Stuart Mill to another great figure in contemporary moral theory, Immanuel Kant, one can ask whether any of the scenarios can be reconciled with Kant's injunction to "treat humanity, whether in your own person or in the person of another, always at the same time as an end and never simply as a means."

Perhaps the parents in the case of the dying child have no desire to expand their family; for them the younger brother would be simply a means of saving the really important life. And even if the parental attitudes were less callous, concerns would remain. In real case histories in which parents have borne a child to save an older sibling, their motives have been much more complex; the Ayala family seems a happy one, and the younger sister is thriving. Ironically, though, in such circumstances the parents' love for the younger child may be manifested most clearly if the project goes awry and the older child dies. Otherwise, the clone—and perhaps the parents as well—will probably always wonder whether he is loved primarily for his usefulness.

Similarly, the grieving widow might be motivated solely by nostalgia for the happy past, so that the child produced by cloning would be valuable only because she was genet-
ically close to the dead. If so, another person is being treated as a means to understandable, but morbid, ends.

The case of the loving lesbians is the purest of the three. The desire to have a child who is biologically related to both of them is one that our society recognizes, at least for heterosexual couples, as completely natural and justifiable. There is no question in this scenario of imposing a particular plan on the nascent life—simply the wish to have a child who is the expression of the couple's mutual love. That is the context in which human cloning would be most defensible.

In recent decades, medicine has enabled many couples to overcome reproductive problems and bear their own biological children. Techniques of assisted reproduction have become mainstream because of a general belief that infertile couples have been deprived of something valuable, and that manipulating human cells is a legitimate response to their frustrations.

But do we, the members of a moral community, know what makes biological connections between parents and offspring valuable? Can we as a society assess the genuine benefits to the general welfare brought about by techniques of assisted reproduction, and do we want to invest in extending those techniques even further? Artificial insemination or in vitro fertilization could help the grieving widow and the lesbian couple in my scenarios; in both cases cloning would create a closer biological connection—but one should ask what makes that extra degree of relatedness worth striving for. As for the parents of the dying child, one can simply hope that the continuing growth of genetic knowledge will provide improved methods of transplantation. By the time human cloning is a real possibility, advances in immunology may enable patients to tolerate tissue from a broader range of sources.

Should human cloning be banned? For the moment, while biology and medicine remain ignorant of the potential risks—the miscarriages and malformed embryos that could result—a moratorium is surely justified. But what if future research on nonhuman mammals proves reassuring? Then, as I have suggested, cloning would be permissible in a small range of cases. Those cases must satisfy two conditions: First, there must be no effort to create a child with specific attributes. Second, there must be no other way to provide an appropriate biological connection between parent and child. As people reflect on the second condition, perhaps some will be moved to consider just how far medicine should go to help people have children "of their own." Many families have found great satisfaction in rearing adopted children. Although infertile couples sometimes suffer great distress, further investment in technologies such as cloning may not be the best way to bring them relief.

The public fascination with cloning reached all the way to the White House almost immediately after Wilmot's epochal announcement. President Clinton was quick first to refer the issue to his National Bioethics Advisory Commission and then to ban federal funding for research into human cloning. The response was panic, reflexive, and disappointing. In the words of the editors of Nature: "At a time when the science policy world is replete with technology foresight exercises, for a US president and other politicians only now to be requesting guidance about [the implications of cloning] is shaming.'

But though society and its leadership are woefully unprepared to handle cloning with policies based on forethought, many people race ahead irresponsibly with fantasies and fears. Human cloning becomes a titillating topic of discussion, while policy makers ignore the pressing ethical issues of the moment. In a fit of moral myopia, the U.S. government moves to reject human cloning because of potential future ills, while it institutes policies that permit existing children to live without proper health care and that endanger children's access to food and shelter.

The respect for the autonomy of lives and the duty to do what one can to let children flourish in their own ways should extend beyond hypothetical discussions about cloning. However strongly one may feel about the plights of loving lesbians, grieving widows or even couples with dying children, deciding how cloning might legitimately be applied to their troubles is not the most urgent moral or political question, or the best use of financial resources. I would hope that the public debate about new developments in biotechnology would ultimately spur our society to be more vigilant about applying the moral principles that we espouse but so often disregard.

Making demands for social investment seems quixotic, particularly when funds for the poor in the United States are being slashed and when other affluent countries are having second thoughts about the responsibilities of societies toward their citizens. The patronizing adjectives, such as "idealistic" and "utopian," that conservatives bestow on liberal programs do nothing to undermine the legitimacy of the demands. What is truly shameful is not that the response to the possibilities of cloning came so late, nor that the response has been so confused, but that the affluent nations have been so reluctant to think through the implications of time-honored moral principles and to design a coherent use of the new genetic science, technology and information for human well-being.

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