THE NEW ATLANTIS
A Journal of Technology & Society

Cloning's Apologist

Caitrin Nicol

Ten years have passed since the birth of Dolly the sheep, the first mammal cloned from an adult, on July 5, 1996. The announcement seven months later of Dolly's creation set off a firestorm of controversy and propelled British embryologist Ian Wilmut to the international spotlight. Now, in a new book written in collaboration with *Daily Telegraph* science editor Roger Highfield, Wilmut sets out to explore the science and ethics of cloning humans.

The first two-thirds of *After Dolly* comprise an interesting retelling of the history of cloning research. It includes a biography of Dolly, a detailed explanation of the cloning process, some discussion of genetic engineering and "pharming," and myriad complaints about media over-attention (for which the remedy, apparently, is the publication of a provocative book). Wilmut also offers an autobiographical sketch, using the bizarre gimmick of telling his own story in contrast to the life of his imaginary clone. "Would my clone be lucky, like me, and fall into the arms of the love of his life at school?" Wilmut asks. Would this "'mini-me'…find it hard to recreate" Wilmut's career trajectory?

After Dolly: The Uses and Misuses of Human Cloning
By Ian Wilmut and Roger Highfield
Norton ~ 2006 ~ 324 pp.
$24.95 (cloth)

Wilmut painstakingly describes the profound technical challenges of creating Dolly, explaining the process of trial and error and breakthrough, and telling how the daily tedium of the research would occasionally be broken by minor moments of drama—like the use of tiny charges of electricity to kick off the fusion of the adult cell nucleus (with its DNA) and the enucleated egg. Wilmut, who has recently been criticized for taking too much credit for the creation of Dolly, bends over backward to spread the glory, praising his many colleagues and admitting that he did not "deserve to take so much credit for an effort that had depended on the hard work of so many others." The excitement of Dolly's birth is portrayed from the perspective of one of these others: Karen Mycock, the scientist who had electrically fused the donor cell and enucleated egg, away at a wedding the day Dolly was born.

> When Karen returned to her room in the Craigendarroch Hotel

to change her hat, she found a fax from Angela that read, "She's been born and she has a white face and furry legs."

"Heaven only knows what the receptionist thought as she slid the fax under our room door," she later recalled. Angela's message meant that the lamb was different from her Blackface surrogate mother. They could rule out any thoughts of a mix-up. They had a clone of an adult cell. Although Dolly had no name at that point, Karen knew that the lamb would make headlines. "I tripped the light fantastic. I thought hurrah and was absolutely ecstatic."

At the ceilidh in the village hall that night, Karen bought drinks for everyone. "I'm a dad," she shouted. "I think the locals will remember the 'mad scientist' who claimed to be a sheep's father and then sunk more than one tequila slammer and proceeded to dance the night away."

The main substance of the book appears in the last third, in which Wilmut argues against the creation of cloned babies but for the creation and destruction of cloned embryos to produce tailor-made pluripotent stem cells. While conceding that "I am no moral philosopher," Wilmut recognizes the centrality of the question of the moral status of the embryo, and he proposes to set to rest the "concerns of the layperson" regarding its human identity. After a brief explanation of the phases of human development, he concludes that it is the "property of self-consciousness, the ability to reflect and to reason" that "makes humans special." "The central reason that I don't regard a blastocyst as a person is that it has no mental life."

This theory of personhood is hardly original, and it is no more compelling simply because it is asserted by a prominent scientist like Wilmut. The moral worth of human beings, including whether they are worthy of protection against deliberate harm, should not depend on their manifest abilities and powers but on the dignity that comes simply with being human. The key question is not what an embryo can or cannot do but what kind of a being it is. Unlike an indeterminate "clump of cells," it is a complete organism with a unique human genetic identity, developing by a self-regulated process with the intrinsic capacity to bring itself to the next stage of maturity. It is undeniably living, and cannot accurately be called anything other than human.

Wilmut's reasoning, however, seems more calculated to justify a certain kind of research than a thoughtful deduction from the facts of nature. Because the first streak of neurological tissue that typically appears around fourteen days is not capable of reflective reasoning, Wilmut accords the early embryo an

"intermediate developing status" as the "critical milestones of a human life" begin to manifest themselves more clearly. But to haggle over the markers of humanity is to suggest that respect for human dignity is conditional on those markers, as he uneasily senses when discussing the standards of a more radical ethicist:

> John Harris would argue that a "person" is a creature capable of valuing its own existence. . . . Over a lifetime an individual will gradually move from being a potential person or a preperson into an actual person when she becomes capable of valuing her own existence. "And if, eventually, she permanently loses this capacity prior to death, she will have ceased to be a person."
>
> This is all very logical and coherent, but I suspect most people would regard an elderly relative who had lost his mind to Alzheimer's as a person. For many the same would go for individuals who are "brain-dead," anencephalic infants, or individuals in a persistent vegetative state. And by the same token I would have an equally conservative view of personhood at the start of human life. Where, precisely, I cannot say. Except that the clutch of one or two hundred cells that makes up a blastocyst is not a person.

Discovering that he has wandered into murky territory, and trying to remain less morally radical than his theory, Wilmut is content to set this critical question aside. He says that "we should be realistic about whether it will ever be possible to reduce complex ethical and moral issues to pure logic." He is willing to grant the embryo a "special respect," but he seems uncomfortable with even that concession: "Regarding my respect for the early embryo, John Harris has remarked, 'Is that like saying that I respect the pig in the bacon sandwich and am doing my best to find something I like to eat as much as bacon sandwiches?'"

Such strangely-chosen analogies are everywhere, and are emblematic of the book's peculiar failure to address seriously the questions it poses itself. Repeatedly shuffling the burden of moral clarity onto his "faith in the majority of people to know right from wrong," Wilmut turns to a tired hypothetical:

> I want you to take stock of what you think about the moral status of the early embryo. Imagine how you would behave in the following scenario. You are visiting an IVF laboratory with a young child. A laboratory assistant brings in a petri dish, carrying it with great care so as not to spill the contents. The child is fascinated to see twelve early embryos in the dish, each consisting of eight cells, under the gaze of a microscope. Two embryos are to be transferred to a patient, and the other ten are to be fro-

> zen and stored in a Dewar flask for possible later use. Suddenly, before anything can happen, the fire alarm goes off. Smoke is billowing in from the corridor, and you have moments to squeeze through a small window before the lab fills with fumes. What would you do? Carry the child or the culture dish containing the twelve embryos?

This morally muddled thought-experiment deserves to be put to rest once and for all. The question facing us in the embryo research debate is not whether to save children or save embryos in an emergency; it is whether we should *actively destroy* embryos for research purposes. Choosing to save one's friend rather than a stranger in a fire would not make it acceptable to kill strangers in order to save our friends. The critical debate about embryo research is not whether the embryo, so small that its humanness is hidden to the naked eye, deserves to be treated exactly the same in every way as an obviously human child or adult; the critical question is whether that embryo deserves simply the bare minimum protection due a human being—protection against being intentionally harmed. Wilmut, for all his talk of "special respect," says no.

When he takes up both the therapeutic possibilities of stem cells and the public debate about embryo research, Wilmut seems to prefer rousing rhetoric to precise facts. He decries the "religious paranoia slowing the quest for treatments," castigating the "pressures on the American scientific community from the Christian Right" and lamenting that "in the United States, under President George W. Bush, federal funding was withdrawn from studies with human embryos because of opposition from the Christian Right." This is flatly false. In reality, the Bush administration was the first to provide federal money for embryonic stem cell research, limiting such funding to existing stem cell lines so as not to create a public incentive for the ongoing destruction of additional embryos. Wilmut disparages pro-life interest in adult stem cell research, citing a colleague at Edinburgh University who believes that the promise of creating pluripotent stem cells from adult tissue has been exaggerated by "overenthusiastic researchers in countries where human embryonic stem cell research is severely limited." In point of fact, in the United States, no form of embryonic stem cell research, including research cloning, is federally prohibited or even regulated—unlike in France, Germany, Canada, and many other nations that have set legal limits on embryo destruction, including a prohibition on the creation and destruction of cloned embryos for any purpose. By contrast, only twelve states in the U.S. prohibit cloning to produce children, and only

half of them prohibit cloning for biomedical research. Since Dolly's debut, several bills pertaining to cloning have been introduced in both houses of Congress, and the House of Representatives has more than once passed anti-cloning legislation, but no such legislation has passed the Senate.

Meanwhile, although Wilmut supports the partial cloning ban in place in the U.K., he is silent about the fact that the policy puts the British government in the unfortunate position of *requiring* that all cloned embryos be destroyed after fourteen days. And while he says that "the specific creation of a blastocyst for research should be a last resort in exceptional situations," his book is written precisely to advocate for so-called "therapeutic cloning," which necessarily requires the production of embryos solely to exploit them. One wonders what Wilmut's moral compromise of "special respect" could possibly mean for these nascent lives that are created expressly for certain destruction.

Wilmut is no more rigorous with the facts when it comes to describing—or selling—the medical promise of embryonic stem cells. He assures us that "over the next few decades" this research will lead to "treatments for degenerative diseases such as heart disease, spinal cord injury, liver damage, diabetes, Parkinson's, motor neuron disease, and Alzheimer's." This grand promise masks the fact that certain diseases will probably never be amenable to a treatment that involves repairing or replacing cells. For example, Alzheimer's disease, one of Wilmut's favorite examples and a common rallying cry in the American stem cell debate, is one of the least likely degenerative diseases to benefit from embryonic stem cell treatments. "I think the chance of doing repairs to Alzheimer's brains by putting in stem cells is small," admitted Dr. Michael Shelanski, the co-director of the Taub Institute for Research on Alzheimer's disease, to the *Washington Post*. Ronald McKay, researcher at the National Institute of Neurological Disorders and Stroke, explained the persistence of claims about stem cells and Alzheimer's by saying that "people need a fairy tale." Heartfelt hopes for a cure are rightly important to scientists and policymakers, but trumpeting an area of research that holds little promise is of no help. Exaggerating the promise of the research is irresponsible on the part of policymakers and celebrities who may not know any better, and deceptive on the part of scientists who do.

The inherent duplicity involved in "therapeutic cloning" is also evident in the tactics employed to convince the public that using cloned embryos is both morally permissible and scientifically necessary. Stem cell scientists and advocates sell the dream of "personalized biological repair kits" made from cloned embryos, euphemistically called "unfertilized eggs"

or "stem cells created by nuclear transfer." Wilmut himself concedes that no stem cell researcher "would dispute the idea that therapeutic cloning does not look very practical as a mass treatment." It would require millions of donated eggs and destroyed embryos, as well as the capacity to manufacture designer stem cells on the spot. The alternative, a stem cell bank, would itself require "hundreds of thousands of embryonic stem cell lines" in order "to establish a bank of cells with immune matches for most potential patients," according to stem cell scientists Robert Lanza and Nadia Rosenthal in *Scientific American* in 2004. All moral issues aside, does any reasonable person believe that this is the future of medicine?

Moving from the destruction of cloned embryos to the creation of cloned babies, Wilmut believes that our experience with other mammals demonstrates why we should not try to bring cloned human beings to birth. He opposes cloning to produce children mostly because of the difficulties inherent in today's cloning techniques—obtaining the many eggs required to create the small number of potentially viable cloned embryos, and then implanting those embryos into women's wombs, a process that required 277 eggs and 29 attempted pregnancies to create Dolly—and because of the "psychological dangers" to the women who risk "the hurt and emotional turmoil of failed pregnancies, miscarriages, and deformed fetuses." Wilmut also points out that scientists still know astonishingly little about the health of cloned large mammals, although it is quite clear that clone pregnancies are abnormal: fetuses of cloned animals tend to be overweight, the immune system and various organs sometimes fail to develop correctly, the pregnancies tend to last significantly longer than usual and are characterized by "inadequate attempts by the mother to give birth," and even after birth the survival rate is appallingly low. And that may not be all: Wilmut is "confident that there are more horrors because, unsurprisingly, laboratories have been reluctant to describe all of the anomalies they have found."

Wilmut believes that there are factors "that could make cloning safer," and that while the technical problems "look daunting…I would never go so far as to say they will never be overcome." Even if all the technical and health problems were solved, however, Wilmut would oppose reproductive cloning, because he is "extremely concerned about the effects on a child of being a clone of another person." Such a moral sentiment is welcome, even if he has little original to say on this important subject. Instead, he briefly recapitulates psychiatrist Stephen Levick's arguments about the psychological burdens of cloning, as described in Levick's 2004 book *Clone Being*.

Wilmut also objects to so-called "designer babies," seeing this particular use of germ-line engineering as both technically implausible and morally misguided. He warns that genetic engineering wrongly applied could "undermine qualities and traits that are fundamental to our humanness. They could exaggerate intolerance of disabilities. There is a need for great caution." Wilmut even stumbles onto a critical insight in discussing the distinction between therapy and enhancement:

> Whatever the shade of gray between enhancement and therapy and whatever boundary is being transgressed, one aspect of this medical intervention stays the same: genetic enhancement . . . will be proposed by parents on behalf of their unborn child. This is about the fate of children of the future, a decision that only has indirect impacts on the person making the choice. Society has an obligation to intervene on the embryo's behalf when it comes to weighing risks and benefits of genetic alteration. Selection for traits thought by the parents to be beneficial could be seen as a curse by the child, as parents bear down to achieve their goals and to make their investment worthwhile. Uninhibited selection of children may erode the unconditional love that is the bedrock of the parent-child relationship.

This is, by far, the most serious moral observation in the book. And read carefully, it reveals the moral problem with his defense of embryo research: society, he says, has "an obligation to intervene on the embryo's behalf," an obligation that makes Wilmut's call for a massive research program centered upon the systematic destruction of nascent human life seem absurd.

Although Wilmut's book is dedicated "to the tens of millions of people who will one day benefit from research on cloning, embryos, and stem cells," it is difficult to find in it much of the compassionate motivation of modern biotechnology. This human dimension—the scientists' desire to relieve the suffering of afflicted patients, to fulfill the longings of couples desperate to conceive, to quell the fears of new parents—is largely lost amid the technical details. Nor is the human meaning of the actual scientific work always explained as clearly as it should be. Wilmut only mentions in passing the taxpayer-funded research that relies on tissues harvested from aborted human fetuses. He tersely notes that human gene therapy trials were "disappointing" during the 1990s, when "scandalously irresponsible and deadly" would have been more accurate. He points out that it is now much easier to test fetuses for Down syndrome, leaving unspoken that this has led to a tremendous rise in the abortion of fetuses suspected to have Down syndrome.

At one point, Wilmut observes that "there is no clear relationship

between intelligence and a sense of social responsibility." There is also, if this book is any indication, no clear relationship between scientific renown and moral sophistication. Wilmut, who again attracted headlines last December with a proposal to bypass existing ethical protocols in high-risk experiments on the terminally ill, is now creating hybrid embryos from human nuclei and rabbit eggs. We are ultimately left to wonder how the history-makers of the modern laboratory can be so narrow, able to remake the world without seeing deeply or taking seriously the moral problems raised by their novel experiments. Perhaps the answer is simple: serious moral reflection might mean real moral limits, and this book, like so many others of this growing genre, seems designed to protect scientific freedom by assuring the public that scientists take research ethics seriously. Sadly, they often do not.

Caitrin Nicol *is a* New Atlantis *intern and a student at the University of Chicago.*