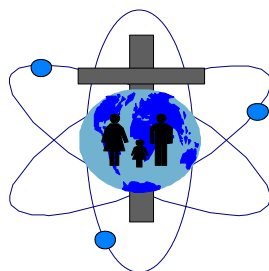


SOCIETY, RELIGION AND TECHNOLOGY PROJECT

Church of Scotland



HUMAN CLONING - The Ethical Issues

Dolly the cloned sheep caused a media sensation. But after the hype subsided, what are the real issues? Why would it be wrong to clone human beings? What about possible medical uses of the technology, like cloning embryos for replacement body cells?

What's the Church doing Here?

Since 1993, the Church of Scotland's Society, Religion and Technology Project (SRT) has looked in depth at the ethics of genetic engineering and cloning in animals and plants with an expert working group. Leading scientists, including Professor Ian Wilmut, leader of the Roslin team that produced Dolly, discussed issues with specialists in ethics, theology, sociology and risk, which culminated in a major book "Engineering Genesis", published by Earthscan in 1998. So when Dolly hit the headlines, in February 1997 the church was already in a position to offer a balanced and informed view on this local Edinburgh issue with global implications. In May 1997 the Church of Scotland General Assembly was one of the first organisations in the world to give a formal view on human and animal cloning, which has been much quoted, for example in a UNESCO declaration. SRT has been deeply engaged in UK, European and international ethical discussions first about cloning, and then also on stem cell issues after the isolation of human embryonic stem cells - which added to the complexity. To help shed light on these confused and often misrepresented issues, we have produced three information sheets: on human cloning, animal cloning and embryonic and adult stem cells.

What is Cloning?

The word "clone" comes from a Greek word for taking a cutting from a plant. To clone is simply to make an exact genetic copy of an existing organism. It happens naturally in many plants (if you bury a potato it sprouts clones of itself), and even a few animals. Significantly, it does not normally happen in mammals and humans, except for "identical" twins. And as we shall see, this is very different from cloning when it comes to the ethical aspects. Dolly changed all that. She is a sheep created by taking cells from the udder of a ewe and "reprogramming" them to create a new embryo by a process known as nuclear transfer, and implanting the embryo in another ewe. This was a biological revolution. It been thought impossible to grow a mammal from body tissue. And if it was possible in sheep (and now cattle and mice also), could it be done in humans? And if it could be, should it be?

What are the ethical objections to cloning human beings?

The overwhelming reaction from most people was that it should not be done, but a fear that someone might try. Statements opposing cloning human beings have issued from numerous national and international organisations, like the UN, the Council of Europe, the European Parliament, the European Commission's ethical advisors, the UK Human Fertilisation and Embryology Authority, many professional medical bodies, and also the scientists at Roslin who cloned Dolly. The UK and many other Governments have now banned it in law. But what exactly is wrong with human cloning? It is not enough that it is unnatural; much medical treatment is also unnatural. The key question is should we respect a biological distinction or celebrate our God-given capacity to override it? Four basic reasons have emerged: control, instrumental use of other humans, risk and relationships.

Control and Instrumentality

In one sense, cloning runs counter to the evolutionary need to maintain a basic level of genetic diversity, and the variety God has created in nature. What about identical twins then? We don't regard them as any less human. Indeed, we often comment on how different each is, because we are far more than just our genes. But the mere existence of "identical" twins does not justify the practice of cloning. Ethically, twinning and cloning are as different as chalk and cheese. In twinning an embryo whose genetic composition has never existed, and is unknown at that point, spontaneously splits into two. It is something random, uncontrolled. Cloning would select the genetic composition of some existing person and try and make another individual with the same genes. It is an intentional, controlled act to produce a specific known end. The crucial point is not the genetic *identity* but the human act of *control* of it. The most fundamental ethical case against human cloning is that no human being should have their complete genetic make up pre-determined by another human.

Cloning is also instrumental. Parents influence and select for their children in a thousand ways socially, but so far they have never been able to choose their genes for them. We can reject their upbringing, but we cannot change our genes. In most of the cases people have speculated about, like providing a donor for bone marrow for a sibling with leukaemia, the person cloned would not be created for their own benefit but someone else's. This is an instrumental way of using another human, as a means to someone else's ends. again this is unacceptable human control. An exception might be cloning one member of a couple to solve infertility, but this would raise other profound problems.

Risk and Relationships

No one knows the psychological effects of discovering one was the twin of one of one's "parents" or sibling. Am I just a copy of someone else who's already existed and not really "me"? What would be my relationship to them? Since we have no sure way of knowing in advance, we surely do not have the right knowingly to inflict that risk on another person. Lastly there is the physical risk, in the light of the animal cloning experience. Major pregnancy difficulties are often feature of cloning work in sheep and cattle. Cloned mice seem to die younger. The understanding of the basic science of nuclear transfer is still rudimentary. No one knows how to guarantee that the cell reprogramming process would not lead to serious abnormalities in the offspring or danger to the mother. To translate such risks into humans would be utterly unethical medically. Each new cloned species has produced unexpected results. One cannot "put down" a deformed cloned baby the way one might a suffering lamb. It is virtually impossible to conceive of a point where one would risk trying cloning on humans.

What about Cloned Human Embryos for Research?

But if cloning people is wrong, what about medical applications? In 1997, the Church of Scotland General Assembly called for an international ban on reproductive human cloning, and we support the proposal for such a UN Treaty, but not for a ban on research uses. In principle, cloning research could throw light on cell and embryo behaviour, fertility and ageing. Vital therapies might result, such as in the case of mitochondrial disease. But any applications which would mean producing cloned embryos raise serious ethical questions. The proposal to extract stem cells from cloned embryos to produce genetically matched replacement cells for degenerative diseases remains highly speculative. No one knows if it could be done, the prospects of therapeutic success, the risks, or where huge numbers of human eggs would come from. This so-called therapeutic cloning seems unlikely to be used except in research. For example, one suggestion is to use cloned embryos to create stable lines of disease state cells. For some *all* embryo research is unethical, and even for those not opposed to embryo research creating cloned embryos poses ethical problems. We explore these issues further in our information sheet 'Embryonic and Adult Stem Cells: Ethical Dilemmas'. Reproductive human cloning should be something no scientist would do, but with mavericks keen to abuse the technology for personal fame, unless and until there is a UN ban, no one should seek to create cloned embryos even for research.