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Cloning Animals and Humans

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CLONING ANIMALS AND HUMANS

- an Ethical View

The Executive Committee of the European Ecumenical Commission for Church and Society has agreed that this paper should be made available in order to help churches in Europe understand discuss the issues relating to cloning. The Executive Committee is grateful to the members of the Bioethics Working Group (listed at the end of the paper) for preparing this document.

Introduction

The Bioethics Working Group of the European Ecumenical Commission for Church and Society is in a special position to make an informed comment on the many ethical issues which have been raised. Long before Dolly the cloned sheep became a global news sensation, one of our member churches had been involved in ethical discussion with the scientists from the Roslin Institute in Edinburgh about genetic engineering work and related issues. A number of members of EECES have made declarations or comments on the subject⁽¹⁾. From this perspective, we are able to offer informed comment on the fundamental and practical questions raised by this research, concerning both animals and humans.

We welcome the opposition to the cloning of human beings expressed by the European Parliament, the protocol to the Council of Europe's Bioethics Convention⁽²⁾. We are, however, disturbed that the ethical concerns which exist widely in Europe about the cloning of animals have not so far been sufficiently recognised by either organisation. The opinion of the European Commission's Group of Advisors on Bioethics provides a much better view in this respect. We are also concerned about the ethical implications of some of the potential developments on the medical applications of nuclear transfer technology about which there is current speculation.

Cloning - Some Important Distinctions

Cloning is a term, which has become used carelessly, and we would clarify what we are referring to. It is not about creating subhuman robots or other science fiction ideas, but the copying of the genetic complement of an individual organism, either through the splitting of an early stage embryo, or the Roslin technique of nuclear transfer. Because there has been much confusion about cloning in the media coverage, it is important to draw a few basic distinctions :

- between the animal cloning which is already possible, and cloning a human being, which is only a speculative possibility, and may never happen,
- between cloning to reproduce a whole organism - so called "reproductive cloning", and cloning cells for a limited medical or veterinary purpose - for some applications of which the somewhat contentious term "therapeutic cloning" has been applied,
- between the specialised use of animal cloning for research or a limited application, and its general use for example in animal production,
- between the unpredictable occurrence of twins in the womb, and the deliberate act of cloning a known existing individual.

We will refer to these from time to time in the following discussion.

Ten Key Questions

We shall examine the issues against the background of the following ten questions.

- How should a society be using its skills in biotechnology?
- What is the nature of cloning in relation to our understanding of the world around us?
- Are there any circumstances under which cloning techniques should be used with animals?
- Are the animal welfare aspects of cloning techniques acceptable or not?
- Should it ever be permissible to clone an entire human being - what are the ethical objections, what are the practical dangers?
- Under what circumstances, if any, would it be ethically acceptable to use cloning techniques in human medicine or medical or veterinary research?
- Would it be ethically acceptable to create cloned human embryos for research purposes?

- Would it be ethically acceptable to attempt to reprogramme animal or human somatic cells in order to create separate organs, assuming this seemed technically possible?
- What are the limits of technical intervention in human reproduction, in organ failure and in the process of ageing?
- How should such cloning research be controlled and kept accountable to the public?

Setting Biotechnology in Perspective

1. How should a society be using its skills in biotechnology?

It is inherent in our nature to find ways to shape the created order around us. When we speak of creation, however, this should not be read as if it were a single event, but includes the continuous evolutionary unfolding of the natural order, which God is both author and sustainer of. Indeed, when the ancient Genesis account describes humans bearing the "image of God" and naming the animals, something creative is implied. As Christians, therefore we are certainly not opposed to biotechnology or biomedical research as such. We are conscious, however, not every development is necessarily acceptable, and that we need to critique the impulses which drive biotechnology and which set its priorities. We have undoubtedly seen important progress in recent years. We have gained a much better understanding of the mechanisms, which control many of the processes of life. Yet the more powerful the methods we use, the more we need to consider not only what is technically possible, but what is happening to us as people if we say "yes" to every possibility which science may enable. The drive to "see if we can do it" which seems at times to be the primary propelling force needs better channelling. Molecular biology is in many ways an immature science. It has begun to realise its power, but has not found out how to use that power in balance with wider aspects of life, and with a realistic understanding of human nature.

Our Christian heritage teaches us to be sceptical of romantic notions of unrestrained human improvement and scientific progress which prevail in some parts of the scientific and political communities. Our support for scientific research is moderated by our awareness of human finiteness and fallibility. We do not know as much about biology as we sometimes think, and human nature sadly inclines us to misuse our God-given talents as well as to use them well. The Bible teaches a holistic view of human life, fulfilled in relationship. Respect for the human person and for our relationships with each other and with the rest of God's creation are therefore more important criteria than mere progress, economic well being, or medical advance in themselves. Good though these things can be, they are not absolutes. This leads us to the conclusion that not all technical progress in biotechnology is necessarily desirable. To become mature, it must learn where to say "no", as well as "yes". This is especially so with cloning.

Fundamental Principles about Cloning

2. What is the nature of cloning in relation to our understanding of the world around us?

There are some voices urging us simply to press ahead to capitalise on recent discoveries, speculating about the potential benefits which could accrue from cloning. This naive view must be challenged, first by considering if we are doing something fundamentally wrong in God's creation, and secondly whether these benefits are at the cost of more important aspects of our humanity or our care for that creation. There has indeed been an almost universal sense that to clone human beings is fundamentally wrong, but it is important to react not only with the heart but with the head also, and examine on what broader principles such an intuition is based. Some of these arguments cannot be sustained on critical examination, but others have substantial import.

For example, it cannot be said that cloning is absolutely unnatural, since it is relatively common in plants. Mammals and humans, however, reproduce sexually, except in the sense that an embryo can split to produce identical twins, which is an asexual process analogous to cloning. This prompts the question whether we should respect this biological distinction or whether we should celebrate our human capacity to override it. This leads us to consider the nature of the world, our humanity, and our reproduction.

For the Christian, the world around us is God's creation, with variety as one of its characteristic features. The overall picture painted in the Bible is of a creation whose sheer diversity is itself a cause of praise to its creator. This celebration of diversity is perhaps reflected in one of the ground rules of selective animal and plant breeding - that species which reproduce sexually rely on maintaining a certain level of genetic diversity. To reduce this diversity by human intervention therefore sounds a warning note already with techniques such as artificial insemination and embryo transfer in cattle. Cloning would take this one stage further by replicating the complete genetic complement of the animal. To some, the idea of reducing genetic diversity to a strict blueprint by deliberately producing genetic replica animals or even humans on demand, would violate something God-given about the nature of things, arguing that cloning is thus absolutely wrong, no matter what it was being used for. This seems to carry the diversity argument too far. It is not that cloning represents a clear line that one has passed over, so much as in the context of increasing technological intervention, whether we should choose to exercise restraint at this point.

Diversity is at best only a partial argument. There are other factors to be considered - the element of control over what is cloned, the level of instrumental use, the scale and the intention. It is easier to see how these

apply in particular contexts. We look first of all at the application to animals, since this is the most immediate issue.

Cloning Animals

3. **Are there any circumstances under which cloning techniques should be used with animals?**
4. **Are the animal welfare aspects of cloning techniques acceptable or not?**

The Edinburgh experiments arose out of the long standing work at Roslin in the genetic modification of sheep and cattle to produce proteins of value to human medicine in their milk. The first product - a protein for the treatment of lung damage in emphysema and cystic fibrosis - has completed its first stage of clinical trials, and many others are expected to follow. Their primary aim in developing nuclear transfer methods was not to produce clones, but to find more precise ways to perform this type of genetic modification in farm animals. The present method of injecting embryos with DNA is random and very inefficient. It would be far more effective to do the genetic modification in vitro, selecting only the desired cells, if only a way could be found to grow animals from the cell culture. This had not been possible in farm animals until the lamb Polly, reported by Roslin in July 1997, became the first transgenic animal to be created by nuclear transfer. The fact that the resulting sheep is a clone, genetically almost identical to its founder, would in this instance only be used to a limited degree, to produce 5-10 founder animals, which would be bred normally after that. In this special context, where the main intention was not to clone the animal as such, and where natural methods would not work for many, it would seem ethically acceptable to use cloning technology, but some have doubts whether this is justified. It is too early to be more specific about other specialist applications, but these would need to be examined critically, for example whether these entailed a more deliberate use of cloning, or perhaps a larger scale, or a more trivial

purpose. Any use is also conditional on the satisfactory resolution of animal welfare questions with the technique, regarding unusually large fetuses and perinatal problems. At present it is too soon to say how much of a problem this would be.

Having created the means to clone farm animals in a limited context, the discoverers have quickly pointed out its applicability to more general use in animal production. But would this be ethical? This question has been neglected by most ethical responses to cloning, and we wish to redress the balance. Various applications have been suggested to clone animals of high genetic value for meat and milk production. In such cases, conventional selective breeding methods already exist. The primary motivation is to side step many generations of breeding, on the grounds of production economics, consumer whims or convenience. Other areas of animal production have shown how we have sacrificed the dignity of the animal for the sake of production efficiency. We need to remind ourselves that we are dealing with individual creatures, not lifeless commodities on a production line. We consider that this would not be ethical, in that such applications would bring the mass production principles of the factory another step too far into the animal kingdom. Just as in the Old Testament an ox was not to be muzzled while treading out the grain, animals have certain freedoms which we should preserve. We may use animals to an extent, but we need to remind ourselves that they are firstly God's creatures, to whom we may not do everything we like. We would distinguish between applications primarily for human economic benefit and ones which would also benefit the animal, such as research into disease resistance, for the same objects need not apply.

Full Human Cloning

5. **Should it ever be permissible to clone an entire human being - what are the ethical objections, what are the practical dangers?**

It is far from certain that the technology used to create Dolly would work if applied to other animals, let alone human beings. On the present knowledge, the number of failures and abnormally large fetuses in the animal cloning work would imply that there would be serious medical risks of applying such research to humans, not only of producing abnormal offspring but of the life of a woman who would carry the clone. This constitutes a strong ethical argument against embarking on the equivalent experimental programme. Despite the claims of some with idealistic views of scientific progress, human cloning may be too dangerous to attempt. Nonetheless, it is important to consider the ethical implications of human applications of the technology.

As Christians, we consider that to clone human beings would be ethically unacceptable as a matter of principle. To choose to replicate the genetic part of human make up technologically has been described as a violation of the basic dignity and uniqueness of each human being made in God's image, but it is important to establish more precisely what is at issue. The main questions centre on the degree of control one human being has over the make up of another, the instrumental way in which cloning would tend to use other human beings, and the risk of serious damage in psychological and relationship aspects.

The biblical picture of humanity implies that we are far more than just our genes, but genes are a fundamental part of our make up. By definition, to clone is to exercise unprecedented control over that dimension of another individual. Such control by one human over another is incompatible with the ethical notion of human freedom, in the sense of that each individual's genetic identity is inherently unpredictable and unplanned. This also shows the important ethical difference between choosing to clone from a known existing individual and the unpredictable creation in the womb of "identical" twins whose genetic nature is unknown. Thus the mere

existence of "identical" twins cannot be cited to justify the practice of cloning.

Most of the uses proposed for cloning would also entail a fundamentally instrumental use of both the clone and the one cloned. There is an important distinction in Christian theology, which admits an instrumental role for animals, to a limited degree, but prohibits it in humans. To clone a child with leukaemia to provide compatible bone marrow would treat the cloned sibling to that extent as means to an end, for the benefit of a third party, rather than for their own sake, and without their consent. An exception to this objection would be the idea of producing a child from an infertile couple by cloning one of them. This raises other problems. Instead of being the unique genetic product of both parents, the child is a copy of one of them. For many this would be a denial of a basic aspect of reproduction. Psychologically, no one knows what would be the effects on human identity and relationships of creating someone who is the twin of their father or mother, but born in a different generation and environment. Would the clone feel that he or she was just a copy of someone else who's already existed and not really themselves? It would surely be wrong knowingly to inflict that unknown risk on someone.

Finally, human cloning would bring grave risks of abuses to humans through exploitation by unscrupulous people. Although it is unlikely it would ever be used on any large scale, the dangers include simply raising unrealistic expectation of cures, or offering financial incentives for dangerous procedures. We consider that it should be outlawed worldwide. We recognise that it would be impossible to stop a "back street" clinic or a dictatorship from ignoring such an international treaty, but the lines need to be drawn. A second line of defence is also called for - the notion of the ethical scientist, for whom it would be against all professional principles to

pursue such research. The attitude of the Edinburgh scientists in condemning the idea of human cloning as unethical is a good example.

Limited Uses of Cloning Methods

6. **Under what circumstances, if any, would it be ethically acceptable to use cloning techniques in human medicine or medical or veterinary research ?**
7. **Would it be acceptable to create cloned human embryos for research purposes?**
8. **Would it be ethically acceptable to attempt to reprogramme animal or human somatic cells in order to create separate organs, assuming this seemed technically possible ?**

There have been many suggestions of ways nuclear transfer technology might be used in a much more limited context to do research into processes of cell differentiation, ageing, infertility and possibly also to reprogramme cells taken from human skin to become, for example bone marrow to graft into leukaemia sufferers. All of these are theoretical ideas. Many would require large further break-throughs in basic science, against the background that the science is at present extremely poorly understood. At this stage, it would be premature to rule out a priori all such limited uses of cloning methods, but without knowing how they might be done, it is hard to assess their ethical validity. Any proposals would need to be subject to careful prior ethical scrutiny and public debate. Some may be acceptable; others could raise formidable ethical problems. For example, even setting aside the controversial questions of embryo research, the creation of cloned human embryos for research purposes would seem unacceptable. It would be ridiculous to permit the creation of the beginnings of a potential individual which one knew in advance one would have to terminate, because its existence as a full human would be considered ethically unacceptable. Cloned human organs would also be a problem if the only route were via research involving animal abuses like the headless frog. The avenue to the technology would be closed off as

unacceptable treatment of animals. Whatever the medical benefits, there are some harms we should never do to animals.

Research - by the people for the people?

9. How should such cloning research be controlled and kept accountable to the public?

These speculations about uses for cloning technology raise two wider questions: one is the deficit in public accountability in the existing procedures whereby research priorities are set. There are no easy solutions to this problem, but, at the very least, it points to the need for a standing ethical commission on non-human biotechnology, whose work is open to public comment and scrutiny, in which those areas of research which are especially likely to have far reaching ethical implications are first debated in public.

Dream of "immortality"?

10. What are the limits of technical intervention in human reproduction, organ failure and the process of ageing?

Another question is the danger of the claim of potential medical benefits being used as a justification for almost any new idea in biotechnology. This brings us back to the basic purpose of such research. Dr Seed's bizarre ideas of achieving immortality through cloning and becoming like God are as antipathetic to Christian belief as they are scientifically unrealistic. But they betray a more widespread, underlying and naive belief in the power of science to solve all human problems. Even the rich cannot go on replacing their organs ad infinitum. Biotechnology cannot be used as an escape from facing up to the theological question of our human mortality and death.

Final remark:

Naturally, this paper does not represent the final word on this difficult question, but the present state of reflection of the Working Group. It would be interested to receive comments from members of EECCS and others. These should be sent to Church and Society Strasbourg office.

EECCS Bioethics Working Group

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Prof. Anna Rollier (geneticist) Italian Protestant Federation,

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Staff of EECCS:

Mr Keith Jenkins, General Secretary

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Documents produced by the working group :

On patenting biotechnological inventions :

- Critique of the Draft EC Patenting Directive, 8.10.1996
- Clarification of the submission on the Draft EC Patenting Directive, 5.11.1996
- Submission to the European Parliament on the «common Position» of the draft Directive on the Patenting of Biotechnological Inventions, 28.3.1998
- Summary of the position for a press conference in Brussels on 4.5.1998

On biomedicine :

Position on Medically Assisted Procreation and the Protection of the Human Embryo, December 1996

On cloning : a French and a German translation of this paper (10FRF)

May 1998

Notes

1. The comments by members of EECCS of which the Working Group is aware are as follows:

- In May 1997, the Church of Scotland adopted a statement on this question.
- In June 1997, the French Protestant Federation adopted a statement on cloning relating both to animals and humans.
- In 1997, the Evangelical Church in Germany published a book on biotechnology: Einverständnis mit der Schöpfung, Gütersloher Verlagshaus, in which the problem of cloning is also discussed.

2. At the end of 1997 the Council of Europe adopted an additional Protocol to the Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine, on the Prohibition of Cloning Human Beings. The Protocol was signed the 12 January 1998 in Paris by 19 member states.