IS CLONING COMPATIBILE WITH HUMAN RIGHTS AND HUMAN DIGNITY

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We reached a scientific milestone on July 5, 1996, with the birth of Dolly, the sheep. Dolly is a clone. For the first time, science proved that it could make a clone from a mature, higher mammal.

The application of cloning techniques to produce human clones has enormous implications for the individual and for society. This paper addresses those concerns from a human rights perspective informed by the Universal Declaration of Human Rights as well as other international documents and philosophies.

CLONING: WHAT IS IT?

Cloning means creating genetically identical individuals.

Genetic material is within the nucleus of any cell (apart from some blood cells). The cloning of Dolly involved removing the nucleus from a grown sheep's udder cell and then placing that nucleus into a sheep egg cell (ovum) whose own nucleus had been removed. The resulting egg cell (with the nucleus, or genetic material, from the donor sheep) was then stimulated to behave as a fertilized egg cell, or a zygote. It then began embryonic development. Shortly thereafter, scientists transferred this embryo to the uterus of an adult sheep. This led to the birth of a healthy lamb, Dolly.

Dolly is genetically identical to the sheep who provided the udder cell (actually, this sheep provided only the nucleus of the udder cell), or the nuclear donor sheep. Dolly can be considered a monozygotic twin of that donor sheep, brought about by means of a biotechnological intervention.

The successful use of this cloning technique implies that we could create embryos artificially from every mammalian cell, including human cells, and develop them into new individuals who would be genetically identical to the donor of the cell from which the nucleus was taken.

Two biological facts are most noteworthy about the resulting clone: Whereas the typical fertilized egg cell occurring in nature gets its genetic material from both a male and a female parent, the clone gets its genetic material from a single donor (the donor of the nucleus). Further, normal fertilization creates a new and unique combination of the genes of the two parents, resulting in a genetically unique individual. By contrast, the cloned individual has the exact gene pattern of the individual from which the nucleus was taken. (The clone's genetic composition is not unique.)

WHAT WOULD CLONING BE USED FOR?

Advocates of human cloning propose a number of possible uses (and arguably justifications) for producing human clones.

A) Artificial procreation

The first and most obvious area of interest is artificial procreation.

Infertile couples, for example, could produce a clone of one parent as an alternative to the traditional means of having a child. (From a strictly genetic point of view, however, the child would then be a monozygotic twin of the cloned parent.) Homosexual couples could also make use of cloning to

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[1] This paper has been published in: Wagner T, Carbone, L.(eds). *Fifty years after the declaration. The United Nations' record on human rights*. New York: University Press of America 2001, p.33-43.

reproduce. Finally, some parents might want to store tissues of their present children to have the option of cloning one a child who might die prematurely.

Cloning of humans might also lead to reproducing people with desired characteristics (the idea, of course, is that the clone, having the same gene pattern as the `original,' would also have the same desirable characteristics). Accomplishing this is not at all certain, of course, since human traits are always formed under the influence of environmental factors as well as genetic ones. Dan McGuire's clone, without hours of baseball training, will be no Dan McGuire.

B) Biomedical Applications

Researchers claim that human cloning would advance certain areas of biomedicine.

Shortly after the news of Dolly, national and international ethics committees began to talk about a distinction between reproductive and non-reproductive cloning. The former implies the birth of a human individual genetically identical to another human being born before (a clone). The latter would involve cloning until the embryonic stage without transferring the embryo to the uterus of a woman. Instead, the embryo is kept in a petri-dish for future medical use. _

The use of non-reproductive cloning as a basic bio-technological procedure could have at least the following three applications:

a) Culturing tissues and organs of patients who suffer from a deficiency in the functioning of those tissues or organs
Scientists can create tissue that is genetically compatible with a patient by taking the nucleus from any of the patient's cells and creating a clone-embryo. They maintain the embryo in a culture in a petri dish. From the central part of this embryo (the so-called inner cell mass), they will then produce a culture of embryonic stem cells (ES cells). (This is a very recent development for scientists.) Then they induce a sample of that culture to develop into specific kinds of cells and tissues, such as brain tissue, pancreas tissue, etc. That cultured tissue can then be transplanted into the patient from whom the nucleus was removed. There is no risk of the patient's immune system rejecting the tissue because, of course, it is genetically identical to his own tissue.

b) Extensive genetic selection of embryos in vitro
Parents will be more and more able to select children that have a desired combination of genes with the practice of cloning. Right now, it is already possible to screen the embryo for the presence of one or two genetic disorders. This process is called pre-implantation genetic diagnosis. It involves removing one or two cells from the embryo for examination and diagnostic testing.

The combination of cloning by nuclear transfer and the culturing of embryonic stem cells will make it possible to screen more embryos for a larger number of possible genetic defects. Scientists can simply create embryonic stem cell cultures from the embryos targeted for screening. The cell cultures allow for more extensive investigation of genetic baggage from the targeted embryo. Obviously, only those embryos with the most favorable genetic constitution will be selected for implantation within the mother to make the journey to birth.

c) Genetic modification of the germ line
Genetic modification of the germ line means altering the genes of human beings and their progeny. At the moment, this practice (or attempts at this practice) is too risky to perform with human beings. But a few bio manipulations could reduce the risk sufficiently in the future that scientists will feel comfortable trying them.

If a scientist wishes to modify the genetic composition of a human being or that human being's progeny, the scientist creates a culture with embryonic stem cells of that human embryo. The culture is modified in the petridish. The scientist then removes the nucleus of the successfully modified cell and

uses this nucleus to create a new embryo (a clone of the original embryo but with the modification). That embryo can then be transferred to the womb to develop to birth.

All this could be made possible by both nuclear transfer cloning and more and more sophisticated culturing of embryonic stem cells.

Given the potential for improvements in certain types of medical treatment, many have said that non-reproductive cloning should be allowed (since this does not result in the birth of a clone of an already born person). When politicians and other representatives of the public called for a ban on human cloning, scientists cautioned not to exclude non-reproductive human cloning research. So called non-reproductive cloning does involve, however, the manipulation and loss of human embryos in vitro, since they are `forced' to develop into embryonic stem cell cultures.

WHAT OBJECTIONS CAN BE RAISED?

Several dimensions of cloning are objectionable and invoke human rights concerns. They should give us pause. Some of the more noteworthy follow.

1. Medical risks to the clone

It is important to realize that most sheep embryos brought about by cloning died soon after being created (during gestation or soon after birth) due to congenital disorders. Dolly was the only healthy lamb born from 277 embryos created by nuclear transfer._In one case, a lamb was about twice the normal size and could be born only by cesarean section. (The same phenomenon has been observed in the cloning of cows.) In one experiment with mice, only 17 live fetuses made it to birth from 800 embryos; and only 10 of those 17 survived to raise healthy offspring. A first generation of cloned human beings would be subjected to these and other unforeseeable risks - not only at the embryonic stage, but also after birth.

All this is clearly unfair to the cloned individual and would violate Article 3 of the Universal Declaration of Human Rights (UDHR) which states: "Everyone has the right to life, liberty and security of person." (Emphasis added.) It is also at odds with provisions of other U.N. documents, such as Article 6.2 of the Convention on the Rights of the Child (CRC), which states: "States parties shall ensure, to the maximum extent possible, the survival and development of the child."

2. Other risks to the clone

Biological or medical risks to the clone are not the only concern. There are psychological and social risks as well.

Producing a child of known genetic constitution implies a conditional acceptance, which is detrimental for any child’s development. Research indicates that an unconditional acceptance by the parents is favourable for a positive psychological development of the child.

Cloning also deprives the cloned child of his natural parents, for he does not have parents in the usual sense of the word. From a genetic point of view, the parents of the clone are actually the clone’s biological grandparents, or the parents of the nuclear donor. These changed relations will have an emotional and therefore developmental impact on the clone.

Then there is the case of the ovum donor and the woman who bears the child and gives birth. This can, but need not be, the same women. It is possible that one woman could provide all three elements: The nucleus, the ovum and the uterus. That woman would in a sense give birth to her own monozygotic twin.

Thus, human cloning will clearly disturb family relationships in a serious way. It is hard to justify such large-scale disruption (both at the familial and societal level) for the rare case when parents wish to reproduce a child who has died at a young age. Confusion regarding family relationships is not good for children, who benefit from stable families.

The United Nation's Convention on the Rights of the Child clearly states: "The child shall have the right from birth to a name ... and as far as possible, the right to know and be cared for by his or her parents." It goes on: "States parties undertake to respect the right of the child to preserve his or her identity ... name and family relations as recognized by law without unlawful interference." Cloning, of course, confounds such declarations, since it upsets the standard parent-child structure.

3. Loss of embryos

Human cloning almost necessarily means the loss of intentionally created human embryos (given the techniques and applications mentioned above). There has been considerable discussion about the status of the human embryo, both within the field of bio-ethics and in society at large, especially in the context of the abortion issue.

With respect to abortion, though, the killing of the unborn child is supposedly justified because of the woman's interests (for example, a right of self-determination), which are said to be in conflict with the child. Quite apart from the question of whether these interests justify abortion, it is clear that in the context of cloning there is no such conflict. No right to self-determination or to control one's own body is at stake. Instead, scientists would intentionally create human embryos, and then kill them, to fulfil certain demands.

The desire to have one's own children, as well as the desire to have healthy children, is very understandable. But such desires cannot justify using human embryos as if they were simply a biological means to a desired end.

Human embryos undeniably belong to the human family. This is a matter of biological fact. According to the Universal Declaration's Preamble, then, our recognition of their inherent dignity, and of their equal and inalienable rights, is the foundation of freedom, justice and peace in the world. The Preamble of the Convention on the Rights of the Child also says as much, stating: "[T]he child.... needs special safeguards and care, including appropriate legal protection before as well as after birth."

The European Parliament's March 12, 1997 Resolution on Cloning Animals and Human Beings also rejects cloning in the context of embryo research. Article 3 states: "[] Urges member states to ban the cloning of human beings at all stages of formation and development, regardless of the method used ..."_

4. Human cloning as contrary to human rights and dignity

Avraham Heschel, an important Jewish scholar, provides insight and context for the human cloning discussion. His work may offer a framework with which to interpret international declarations or other documents on the cloning question.

Heschel distinguishes two fundamentally different ways in which the human being can relate to reality: He calls these ways `manipulation' and `appreciation.' With the former, the individual views his surroundings as things to handle, to control, and to utilize. With the latter, the individual views his surroundings as things to accept, to comprehend, to appreciate or to admire.

Manipulation, Heschel contends, is the cause of alienation, for there is no bond between the individual

and his surroundings except utility. Ultimately, the individual is alone and things have no meaning apart from his use for them.

In our modern age, and especially in technological areas including science, the attitude of manipulation dominates. In fact, the pro-technology mentality encourages this approach to reality, for technology is now the chief instrument to control and manipulate the environment. Technology users begin to see reality itself only in terms of utility and meaning for them. Nothing has meaning in and of itself. The individual becomes the only source of meaning for all things, and, especially worrisome, for all others. This mentality signals the death of transcendence, and tends to deny the transcendence of man in particular.

This approach to reality distorts life. The modern age itself is evidence of this. So many people in our time feel that their lives have no real meaning. This is because true meaning is not something we generate. It is, rather, given to us. We have only to acknowledge and accept it.

Human beings have a dimension of transcendence, as does the creation of new human beings. We are not just the ordered conglomerate of cells. Each person is a bit of a mystery and not a predictable product of parents. Parents in particular know this as they discover that they cannot completely understand or explain their own children on the basis of who they are themselves. In each child there is something new and unique, something that ultimately remains a mystery and beyond our control. This is as it should be.

Cloning is an attempt to bring that mystery under our control. It reduces the child (at least in his or her biological constitution) to (one of) his or her parents. This cannot fully succeed, of course, since the cloned child would be a unique human being (as well as influenced by necessarily different environmental factors). But that kind of reproduction itself changes the parent-child relationship. The clone is the projection of somebody else. His biological characteristics were programmed.

With cloning, a process of creation becomes a process of manufacturing. A child becomes more of a product. And a product is never equal with its producer. The child's own character is compromised, as it is no longer received as a transcendent gift. The claim that the cloned child will be very well accepted and loved overlooks both the structural change in the parent-child relationship and this compromise of transcendence.

The human being's unique genetic constitution is the biological foundation of his moral freedom and independence. It is also, therefore, fundamental to his dignity and his equality with all human beings. If one human being becomes, even to a very small extent, the product of intentional technological manipulations of others, all this is undermined. We tamper with this foundation at the risk of human rights.

It is for this reason that cloning and enhanced genetic modification (aimed at improving human beings and their progeny) contradict Article 1 of the Universal Declaration on Human Rights, which states that, "All human beings are born free and equal in dignity and rights." The Universal Declaration on the Human Genome and Human Rights (accepted by the General Conference of Unesco, d.d. 11-11-1997A) is more straightforward: "Practices which are contrary to human dignity, such as reproductive cloning of human beings, shall not be permitted." (Art. 11)._

Conclusion

It is clear that human rights documents, including the United Nations Universal Declaration of Human Rights, condemn (sometimes explicitly) the cloning of human beings. They do so for good reasons. Human cloning would compromise the well-being and the moral status of the resulting child and threatens human dignity generally. If we are to be true to human rights, and to the Universal Declaration proclaiming them, we should put this truth before the curiosity of science.

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Notes

1 The original article was published by Ian Wilmut, et al. in Nature magazine (385:810-813, 1997). Other popular scientific descriptions and discussions include: A. Coghlan, "One Small Step for a Sheep ....," The New Scientist,153, no.2071: 4-5 (1997); P. Cohen, "We ask, they answer," New Scientist, 158, no. 2133: 26-35 (1998); and N. Boyce, "Go Forth and Multiply," New Scientist, 159, no. 2144: 4,5 (1998).
2 A clone is not 100% genetically identical to the nuclear donor. Certain structures in cells, the mitochondria, also contain some genetic material. A clone has the mitochondria of the egg cell that is used in the cloning process. The contribution of normal mitochondria DNA to "normal" traits is minimal, though defects in that DNA can lead to serious disorders.
3 A Dutch paper recently reported that an American firm, Valiant Venture (in the Bahamas), is offering a commercial service of cloning both animals and humans on demand. The firm offers to store tissues precisely to make a clone of a deceased child. See "Vrees voor genetische vuilnisbelt kleurt debat over klonen". Het Financieele Dagblad 7 July 1998:5.
4 See publications of the National Bioethics Advisory Committee of the USA and the Group of Advisers on the Ethical Implications of Biotechnology to the European Commission. (For the executive summary of the former's findings and discussion of same, see Hastings Center Report, 27, no. 5: 6-19 (1997); for report of the latter, see "Ethical aspects of cloning techniques", Opinion of the Group of Advisers on the Ethical Implications of Biotechnology to the European Commission, no. 9, Brussels, Belgium, 28 May 1997.
5 The terminology is problematic, of course. As a matter of biological fact, the creation of human embryos is the first step in human reproduction. This paper uses these terms only to describe the present debate and not to suggest the acceptability of any type of cloning, so called "non-reproductive" cloning or otherwise.
6 J.A. Tomson et al., "Embyronic Stem Cell Lines Derived from Human Blastocysts," Science 1998, vol. 282 (5391), p. 1145 ff; John D. Gearhart et al, "Derivation of Pluripotent Stem Cells from Cultured Human Primordial Germ Cells," Proceedings of the National Academy of Sciences, Vol. 95: 23, Washington, D.C., November 10, 1998. (Gearhart is actually the last author listed.) Gearhart used tissue from aborted fetuses. If it were possible to obtain embryonic stem cells from tissue of fetuses that aborted spontaneously, this would be an ethical alternative to culturing cells from viable embryos (presuming that embryos are viable if allowed to develop).
7 M. Wadman, "Cloning without human clones," The Wall Street Journal, 20 Jan 98. See also J. Stephenson, "Threatened Bans on Human Cloning Research could Hamper Advances," JAMA 277: 1023-1026, April 2 (1997). Some scientists even argued that reproductive cloning should not be legally forbidden. See "Five Year Ban on Human Cloning in USA," General Ethics News, Issue 18, June/July 1997: 3. The National Bioethics Advisory Committee of the USA called for a ban for five years on reproductive cloning, but considered non-reproductive cloning ethically comparable with creating embryos for research and did not make a statement on that.
8 Supra note 1.
9 N. Boyce, supra see note 1.
10 J. Duyndam. "Zorg en generositeit," in H. Manschot, M. Verkerk (red.). Ethiek van de zorg, Amsterdam: Boom 1994: 119-150. Duyndam refers to several works, including the research published in: S.P. Onliner, P.M. Onliner. The Altruistic Personality: Rescuers of Jews in Nazi Europe. New York: Free Press 1988.
11 The Universal Declaration of Human Rights, Preamble.
12 Bulletin of Medical Ethics, May 1997: 10. The Council of Europe's Convention for the Protection of Human Rights and Dignity of the Human Being with Regard to the Application of Biology and Medicine also condemns the fully instrumental use of human embryos. In Article 18 it reads: (1) Where the law allows research on embryos in vitro, it shall ensure adequate protection of the embryo. (2) The creation of human embryos for research purposes is prohibited.
13 A.J. Heschel. Wie is de mens? (Who Is Man?), Stanford University Press (Stanford, CA), 1965.
14 Some of the points raised here are elaborated further by several authors, especially by G. Meilander and C.B. Mitchell in Ethics & Medicine 1998; 14, no. 1:8-30.
15 Other European institutions have also issued declarations on cloning. The Council of Europe published a 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 1997 Convention, accepted by many European countries, did not, however, contain any statement on cloning. Therefore, it was considered desirable to add a protocol on this topic.) This protocol was signed by 19 member States of the Council of Europe in January 1998. Article 1 states: "Any intervention seeking to create a human being genetically identical to another human being, whether living or dead, is prohibited." (See: Bull. Med. Ethics, January 1998, at 4). Some countries, including The Netherlands, signed the protocol with the restriction that they interpreted it as a prohibition of reproductive cloning, not of the use of cloning in the context of research with embryos and ES cells (see text at 2). The Group of Advisers on the Ethical implications of Biotechnology to the European Commission (see supra note 4) also rejected reproductive cloning but did not take an explicit position on non-reproductive cloning.