

Multiplying individuals, ethical implications of the human reproductive cloning

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1. Premises

In 1998, Dr. Seed, a Chicago physicist declared he would open a clinic for cloning human beings. His declaration referred to results achieved by Dr. Don Jons who announced the cloning of two *Rhesus* monkeys resulting from 166 attempts using a cell taken from embryos as donor (*New Scientist* 17, January 1998). Since the monkey's DNA differs from humans' by only 1% of acid nucleic information (Cohen 1998), Dr Seed declared that the cloning of a human being was practicable.

In December 16, 1998, a team of scientists from South Korea cloned a human embryo. The Korean scientists removed the nucleus of an egg cell donated by a 30-year-old woman and replaced it with a nucleus taken from her somatic cells. This experiment was stopped when embryo was dividing into 4 cells because of moral concerns. It has proofed that human reproductive cloning is feasible (Eisemberg 1999:471). And finally, on Friday the 9th of March 2001 a group of scientists (Dr. Antinori, Dr. Panayiotis Zavosand, Dr. Avi Ben Abraham) have announced at a press conference in Rome that they would be fully prepared to perform therapeutic human cloning, as an infertility treatment. All these examples show that discussions about human reproductive cloning are needed and urgent.

In a report, recently published three general areas of research have been so far identified that would benefit of the use of nuclear transfer cloning, using either embryonic or adult human donor nuclei: (1) basic developmental biology conducted in vitro on embryos up to day 14; (2) in vitro cell differentiation to generate specific human cell types for potential cell-based therapies; and (3) the generation of cloned offspring for the treatment of infertility or related reproductive reasons (Don, 2000, <http://www.rand.org.cti>). All these data show that human cloning is an extremely promising technology for both bio-medical and pharmacological industry. As such, if we do not provide valid arguments to reject such a technology we have no reason to oppose to it a priori (1).

In this paper I will approach some implications of human reproductive cloning (HRC), exploring the pro-cons arguments that have been posited by some bioethicists to discuss HRC.

2. Human Reproductive Cloning

As I previously said, the possibility to clone human beings is concrete. No heuristic limits prevent the use of HRC in human genetics (Colmann 1999; Eisember 1999). Moreover, political reactions to this hypothesis have been so alarmist as to ban cloning. The idea to use cloning to manufacture human beings has been considered as a terrific prospect. In the United States, President Clinton banned human reproductive cloning from both federal financing and privately

funded research. The Director-General of the World Health Organization (WHO) defined human cloning as "ethically unacceptable as it would violate some of the basic principles which govern medically assisted reproduction. These include respect for the dignity of the human being and the protection of the security of human genetic material" (WHO 1997). Around the world human cloning was called a violation of human rights and human dignity. In Europe, the Council of Europe had condemned human cloning in 1986. The negative reaction to the use of cloning for human reproduction is exemplified in the opinion produced by the European Group of Experts on ethics (EGE) of the European Commission:

"... Any attempt to produce a genetically identical human individual by nuclear substitution from a human adult or child cell ('reproductive cloning') should be prohibited ... The use of cloning on humans resurrects the controversy about embryo research. It brings into play the ethical principles of respect of human dignity and non-instrumentalization of the human body. It also creates concerns regarding its potential use for eugenics objectives." (The GAEIB's Opinion No 9 of 28 May 1997)

And finally, the French and German representatives at the United Nations are currently asking a ban on human reproductive cloning to be adopted by the UN plenary assembly (October 2001).

Although human reproductive cloning is banned in most of the countries of the world (2), it is possible that in some laboratory scientists are currently cloning a human being. To what extent would such an action be ethically wrong? Let us try to respond to this question through the main arguments posited by bioethicists to oppose human reproductive cloning:

1) *Human reproductive cloning would violate human dignity and uniqueness.*

Some ethicists claimed that HRC would affect the dignity of human beings (Macklin 1994). They said that we should oppose HRC because it would diminish the respect of human life (since it considers human beings as 'replaceable'). This is for two reasons: if we clone a specific individual, 1) his/her identity will be duplicated, 2) human beings will be seen as manufacturable. Let us consider the two claims separately.

The first claim (duplication of the cloned organism) is problematic since we have no reason to consider clones as carbon copies of their ancestor (3). The interaction between an individual and his/her environment and other biological phenomena make clones autonomous individualities. Clones are organisms having a high similarity rate (from a genetic point of view) with their progenitor (4). As such, they can be seen as copies of the cloned individual only through genetic determinism. A theory which is confuted by modern genomics, developmental genetics and other branches of biological sciences (for example neuroscience).

The second claim (instrumentality of human beings) is indubitably correct but it also applies to other reproductive technologies (IVF). According to Macklin, this argument would be relevant for HRC because it may involve a different way to value the moral status of clones. In a sense, that people may consider a clone as less valuable (ethically) than other individuals because (a) his/her genome derives from another organism, (b) his/her existence does not refer to sexual reproduction mechanisms.

In my opinion, this claim is hardly defensible. We may apply this argument to say that people being generated by reproductive technologies could be seen as less valuable as well (from a moral point of view), but this is not the case. In all modern societies, people who had born from reproductive technologies and individuals naturally procreated have the same moral status. This is a fact. Why this ethical discrimination should apply to clones and not to the above mentioned

individuals?

Let us consider the claim that HRC would affect human dignity. As I have already said, most of the documents prepared by International and National ethics committees to discuss HRC claim that HRC does not respect human dignity. This remark seems to me nonsensical. To me the human dignity concept should not be used to discuss the ethics of human genetics since it is unable to explain the physical existence of human beings. If human dignity is inherent to people's life (an ontological factor), as existing entities, it should apply to clones as well. This is because clones exist as individuals. If the human dignity principle refers to the human right not 'to have a manipulated genome', cloning would be ethically legitimate since HRC duplicates and not manipulates a given genotype. We cannot claim that clones are copies of their mother (as genetic determinism or essentialism said) because clones are (biologically speaking) autonomous individuals. Both the human dignity and the uniqueness criterion do not provide valid reasons to oppose human reproductive cloning.

2) Human reproductive cloning would diminish genetic diversity, leaving us more vulnerable to disease epidemics, etc.

Some bioethicists claimed that HRC would not cause any impact on both genetic diversity and adaptive phenomena (or epidemics) because the number of manufactured clones would never 'make a difference' at a population level (population genetics). I personally do not agree with this claim. When we say that HCR is ethically legitimate we admit (in principle) the use of this technology at a population level. Conceptually we cannot say that when we manufacture two clones our action is ethically legitimate but when we use this technique to manufacture (say) five clones our action is ethically wrong. As such, I do agree with advocates of the biodiversity criterion, but I do not see any reason to restrict this argument to human applications of nuclear transfer technology -NTT. If we attribute a normative value to biodiversity, both human and animal cloning should be equally prohibited (5). I do know that the use of animals in research is permitted, but we should be aware that regulations-controls applied to define the legitimacy of research involving animals have never addressed animal cloning in their specificity. Let us think of the debate about the integrity of animals that took place in the Netherlands in the last years (Dol et al. 1999, Verhoog 1999, Brom 1999, Salvi 2001:15-28). However, I am aware we could solve this problem by fixing a maximum number of clones to be produced via HRC.

3) Human reproductive cloning could lead to the creation of human monsters or freaks.

In my opinion this argument does not apply to HRC. Human reproductive cloning is not a genetic manipulation. It is a technique to duplicate an organism with a given genotype. The possibility to create monsters does not belong to human reproductive cloning but to other application of biotechnology (think of the creation of human hybrid (6)). As a matter of fact, a number of experiments to create human hybrids are taking place around the globe. For example in October 2000, scientists have submitted an application to the European Patent Office to patent an embryonic pig-human hybrid. The researchers, from two private companies (Stem Cell Sciences in Australia and Biotransplant in America), took a cell from a human foetus, extracted the nucleus and then inserted it into a pig's egg cell. Two embryos were grown to the 32-cell stage of embryogenesis (*Sunday Times*, 8.10.2000). About 97% of DNA of the human-pig chimera was human, the 3% of DNA from the pig. The ethical legitimacy of producing such organisms is controversial indeed. The fact that we may use HRC to duplicate the pig-human hybrid does not add anything, from a moral point of view, to ongoing discussions about the

ethics of producing human hybrids.

4) *Human reproductive cloning would increase social inequalities and use resources to allocate to more important medical and social needs.*

The claim that HRC would divert economic resources from other areas of biomedical sciences (Callahan 1993) does not concern HRC but issues related to resources allocation in public health systems. If we claim that public funds should not be used for HRC, then private laboratories could finance HRC clinical trials. This would involve that HRC should be simply excluded from public funds and not banned as it is. To the contrary, one may object that since the technology used to clone individuals (NTT) is quite known and not expansive, HRC could be seen as a cheap alternative to infertility treatments (for example). Then, the argument stressing issues related to resources allocation does not really concern HRC.

On the other hand, the claim that HRC would increase social inequalities does not provide any valid reason to oppose/authorise HRC. As a matter of fact, rich classes have access to medical infrastructures that are not accessible to poor people. I do not see any reason to claim that human reproductive cloning would contribute to social inequalities without applying this argument to other infertility treatments. If 'social inequalities' is meant as an unfair access to bio-medical technologies, then it is not HRC to increase such a phenomenon that is inherent to modern capitalistic societies. What could contribute to social inequalities would be the use of HRC for instrumental purposes (such as 'producing' slaves). However, we could use other reproductive techniques, such as *in vitro* fertilisation, to achieve these goals (7).

5) *Human reproductive cloning could lead to a new type of family.*

This is, I think, a strong argument against HRC. We have no ideas concerning the psychological reaction of the cloned individual in considering his/her biological origin (Callahan 1993). However, this problem concerns also *in-vitro* fertilisation and the use of donor sperm. It is thus a problem that strictly characterises new reproductive technologies. According to this, cloning would be just another way of providing a couple with a biological child they might otherwise be unable to have (cloning as an infertility treatment (8)). If this claim is acceptable, cloning should be acceptable as well.' (Wachbroit 1997) The central novelty of HRC is the fact that a clone has only one biological parent. This problem might make family lineage unclear. Nevertheless some assisted reproductive technologies, such as anonymous sperm donor, or surrogate maternity, raise similar implications. It is a fact that new reproductive technologies are completely changing the family structure (Charlesworth 1993:65). Why do we have to accept these technologies and refute HRC?

6) *Human reproductive cloning would lead to unacceptable consequences and risks for the clones.*

According to biology (Cohen 1998:4) we do know that (a) the perinatal mortality of clones is high, (b) clones have biological defectiveness, (c) cloning is an ineffective technique indeed (276 failures to manufacture Dolly). If we claim that HRC should be prohibited because of safety issues towards both the two actors involved in HRC (the recipient mother and the clone), we should explain why these factors are so relevant to induce us to consider HRC unethical. On the one hand the recipient mother in whom uterus clones are implanted to develop does not pay

different risks that the ones involved in other reproductive technologies (such as IVF). On the other hand, if we have the duty to protect the life of future-borns, we should oppose HRC because of the perinatal mortality rate, but we should extend this argument to IVF as well. As such, both HRC and IVF should be equally prohibited for safety reasons towards the future born individuals.

If we claim that future born clones may have some biological dysfunctions (genetic predisposition to cancer – Weiss 1997, shorter length of life – Cohen 1998:4), we may say that unavoidable risks are inherent to other medical practices involving unborn individuals (*in utero* interventions to treat *spina bifida* for example). As such it would be difficult to say whether this argument would really apply to HRC when animal experiments could optimise this technology and explain factors causing the physiological weakness of clones. On the other hand we do know that cloning is a risk technology. Animal experiments show that the mortality of clones is high. Currently, 50% of clones perish during pregnancy (perinatal mortality). This abnormal perinatal mortality rate may suggest that cloned individuals have physiological weakness (9) (Cohen 1998:4).

7) *Human reproductive cloning would violate human rights.*

Some bioethicists claimed that HRC would violate a number of human ‘rights’: the right to a unique genetic identity (Chadwick 1987), the right to ignorance (Jonas 1974), the right to an open future (Feinberg 1980) etc. Why? Let us deal with all these rights singularly, we will see that they all involve genetic determinism.

Although the genetic identity uniqueness is a fundamental feature of living organisms the claim that it should be protected as a human right implies that it is considered as the key biological feature of individuals. Otherwise why do we have to respect the genetic identity and not, for example, the metabolic process of a given subject? Also metabolism has a primary role in the biological existence of living beings, but we do use drugs to modify this biological mechanism also for aesthetic purposes (diets, body building etc.). We may say that genetic identity is important (as I do here) but if we do not explain why it is so important to be an inherent right of individuals, then we have no reason to accept the genetic uniqueness criterion. This criterion is defensible only within genetic reductionism, a theory that does not reach (biologically speaking) a consensus among biologists anymore. In parallel, this argument, if coherently applied, should oppose to animal cloning as well. But this is not the case.

As concerns the other two rights mentioned above (right to ignorance, right to an open future) in my opinion they hardly apply to HRC. Jonas (1974) posited the right to ignorance. According to Jonas homozygous twins have different biographies from the beginning of their existence. Clones would know too much, from a genetic point of view about their future since they may be in contact with the cloned individual. This may provide them with information related to their biological future. To me this remark is nonsensical. As we know, clones will have a different phenotypic expression than the cloned organism. Their biography is not linked to the one of the cloned organism both biologically and psychologically. As such I do not understand why clones may be negatively affected by having contacts with their ancestor.

Also the right to an open future can hardly apply to HRC. Clones have an open future as well. Biologically and biographically they will live autonomous existences, like all human beings do. These lives will be influenced by socio-cultural and environmental factors. Both the right to ignorance and the right to an open future could be relevant if we think of people’s existence through genetic determinism. In this case the high similarity among clones would affect their

lives. But this is biologically nonsensical.

The above-mentioned remarks show the extreme problematic nature of human reproductive cloning. Criticisms to HRC do not really provide valid reasons to oppose HRC and accept other reproductive technologies (basically those ones that involve a genetic manipulation of newborn children). The open question is: 'Why should we clone human beings?' Let us consider some potential pro arguments claimed by advocates of HRC:

1) We might clone exceptional individuals (such as Nobel Prize laureates)

The claim that cloning would allow the duplication of exceptional individuals is biologically false. Cognitive sciences and neurology have proved the context-dependency of individuals' intellectual capacities. A clone of Einstein can be an individual with an absolutely normal intelligence. However, the Nobel Prize spermbank is an example that the idea that specific gene pools can be depository of the features of their donors is still consolidated among biologists.

I have already dealt with the biological implications of cloning elsewhere (Salvi 2001). As I have already said, the claim that a clone is a carbon copy of another individual is biologically false (10). Therefore, although individuals have a genetic identity, based on the phenotypic expression of genotype and interactions between the environment and gene expression mechanisms, the idea that the cloning of a specific gene pool may determine the same phenotype expression of the ancestor's genotype, is not correct. The problem is whether a specific gene predisposition that is supposed to have a basic role in the qualitative features of the expressed genotype would be sufficiently similar to the parent's to allow us to think that the clone may have a specific predisposition that appeared in his/her ancestor. Although genes have a role (not so strong as advocates of gene determinism said) in phenotype expression, we have no arguments to say that this would be enough to say that the clone of Einstein will have the intellectual capacity of this/her father.

2) We might help those families in which a husband or a wife has a lethal recessive gene (11)

The claim that cloning would obstruct the transmission of specific pathogenic allelic frequency is justified but it could be criticised by saying that those families that are in the condition described above could adopt children rather than use HRC. In parallel, since we have alternative techniques (such as sperm donor and *in vitro* fertilisation) to solve this problem, why should we use cloning (12)?

3) We might substitute existing reproductive technologies maybe with less risk reproductive technique (cloning as an infertility treatment)

The claim that HRC could be conceived as an alternative method to optimise already-existing new-reproductive technologies is extremely problematic. As Dr Brock underlined the reproductive interest in question (with HRC) is not only reproduction itself but also "a more specific interest in choosing what kind of children to have" (Brock 2000, p.5). As a matter of fact parents have a sort of control of what kind of children to generate (think of prenatal genetic testing) and what kind of person to educate (think of both educational and environmental influences –Harris 1992, 1998). But we cannot deny that HRC has specific features that diversify such a reproductive technology from sexual reproduction. When we perform HRC we do

manufacture an individual that has a specific genetic lineage. As such, it is hard to me to consider HRC as an alternative to infertility treatments. Even if I do see that a number of infertility treatments and HRC rise similar moral implications (13).

4) We might use HRC for obtaining life-saving organs.

Dr Kahan (1989) proposed to think of HRC as a way to produce brain-death organisms (brain cells of cloned embryos were supposed to be removed during embryogenesis). It is clear that such a proposal is unethical since it would involve the creation of organisms not only created for instrumental purposes but also being biologically manufactured to have physiological deficits. These deficits would be so deep to unable them to have a psychological identity. I do not see any argument to support this hypothesis. The intentional production of anencephalic newborn is unjustifiable since it would involve the creation of an individual whose existence is intentionally designed for the benefit of another. I am aware that other examples of instrumental selection of embryos exist. For example on March 2000, a child was conceived as a donor. Doctors selected one among six embryos during in vitro fertilisation using early-stage genetic testing. The embryo selection operated on the basis of two criteria: (a) to ensure that a rare genetic disease called Fanconi anaemia would not be inherited and (b) to guarantee a good transplant match for the embryo's to be 6-year-old sister, who does have the disease. But the problem of using HRC to manufacture anencephalics is ethically unjustifiable since the new born will be not only conceived as a donor (as the previous case in which the donor was healthy and the donation itself would not cause any consequence for him), but as a unconscious individual. Such an individual would be intentionally created to have a lack of consciousness capacities. He/she would be intentionally manufactured to have serious handicaps.

All the remarks above mentioned show that the potential benefits of HRC do not provide decisive arguments to support the ethical legitimacy of such a medical practice. To me the main puzzle remains the following: why ought we to clone human beings (such as other living beings)? The use of this technique in reproduction is really problematic since other techniques exist that can be used to help sterile couples. I thus do not see valid reasons to clone human beings. But this does not mean that cloning is wrong, simply that its use is not necessary.

3. Conclusions

Let us come back to the question I have previously posited: Is it right or wrong to clone human beings? My answer to this problem is neither univocal nor sure. According to reasons above addressed, clones are autonomous individuals, as such they are moral entities. The problem implication of their existence is possession of a common genetic makeup. We may say that this biological anomaly would make a difference for them only if we would use genetic reductionism arguments. But we have seen that we have no reason to do it. Most of the criticisms to HRC could be used to oppose reproduction technologies (such as IVF) which are generally accepted worldwide. Thus, I do not see valid arguments to oppose to HRC, even if the public at large has clearly said that HRC should be banned for ethical reasons.

When we realise that clones are autonomous individuals, it becomes clear that they are moral subjects. We cannot deny their value as moral entities in the name of their unnatural birth, because otherwise we should do the same for people whose birth resulted from other reproductive technologies. HRC would be ethically unacceptable if used to produce living organ banks. However, also in this case, it would not be HRC to be ethically wrong but the genetic

manipulation of newborn organisms having a genome modified to express physiological weakness or handicaps. This involves that cloning *per se* is not problematic from an ethical point of view. What is problematic, in my opinion, is the expected goals of HRC. Which benefit could we achieve via HRC?

At the present, I do not see any concrete benefit that may arise from HRC. I only see a number of implications (such as the impact of such a technology towards human diversity) that *per se* do not provide arguments to oppose HRC. These problem implications suggest that it would be better to wait until we have a clearer picture of reason why such a reproductive technology should be allowed. *Cloning is a technique, a tool.* Its applications will determine its value.

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Notes

(1) Let us not forget that when new reproductive technologies, such as IVF, were introduced as an infertility treatments, some people said that we came into the Frankenstein era. Now, the above mentioned technologies are used on a daily basis worldwide and they have lead to the birth of healthy babies. [back](#)

(2) "Will human cloning be done? Undoubtedly. In large parts of the world, there will be no particular scruples about this method, and in some countries it could produce foreign exchange, especially if banned in the United States and Europe. The technique used in sheep cloning does not require a highly sophisticated laboratory. Since the United States government does not support research on the human embryo, and the United Kingdom, France and Germany have banned cloning (as Canada also may), the research making cloning possible may take place in Asia, Eastern Europe, or the Near East. Much of it may take place in secret." (Wertz D., *Cloning Humans: Is it Ethical?*, *Gene Letter* 1, Issue 5, March 1997) [back](#)

(3) From a biological point of view, a number of factors deny the claim that clones are carbon copy of their ancestors (Revel 2000, Shiels et al. 1991): 1) Dolly's mitochondrial DNA comes from the egg donor (usually mitochondrial DNA comes from the mother); 2) Dolly's immune system genes are not developed at the embryo stage (Dolly has a different immune system from her mother). According to biology, environmental factors influence the phenotypic expression of a genotype. "Phenotypic identity requires identity between genotypes, which cloning can ensure, and identity between environmental interactions, which it cannot ensure." (Eisemberg, 1999). A cloned DNA, thus, will express differently in the phenotype of different clones. Nevertheless, the similarity between two clones is so high as to show two identical individuals. This coincidence is only apparent, since two clones have a range of constitutive qualitative dissimilarities (Kolata 1998). [back](#)

(4) Even if we stress the uniqueness of the phenotypic identity of organisms, we cannot think of clones as identical bodies since mechanisms of gene expression into a phenotype and the above-

mentioned influence with the environment differentiate clones. We can then talk about high similarities among clones but not about copies of ancestors. [back](#)

(5) As such, cloning should not be allowed as a reproductive tool in animal breeding programmes (or in a strict limited number to be equally used for human and animal beings). Which is exactly the main reason why NTT has been developed. [back](#)

(6) People might think that questions related human/non-Human hybrid cells are 'science fiction', but this is not true. On November 1998 the US National Bioethics Advisory Commission (NBAC) had discussed the bioethical implications of the creation of bovine/human hybrid cells. (Scientists have fused the nucleus of a human cell with an egg cell taken from a cow.) The NBAC has concluded that since this experiment was not aimed to create hybrid embryos, it did not rise ethical concerns. I personally think that this conclusion is simplistic. The central problem, in my view, is: to what extent should interspecies hybridisation be permissible? If the creation of hybrid organisms is legitimate, then hybrids should develop. Why producing hybrid cells should be ethically legitimate and letting hybrid embryos develop should not? [back](#)

(7) The need of making couple as direct actor in decision processes related to genetics and human reproduction has been stressed by McLaren A. (1998:427-431). According to Dr. McLaren, human genetics has social responsibilities. Then systems of statutory regulations become pre-requisite for a correct use of available technologies in human reproduction. [back](#)

(8) A discussion about HRC as an infertility treatment is in Brock, 2000:4-7 [back](#)

(9) Another implication of cloning refers to sexual reproduction mechanisms. A clone develops from a cell derived from an adult tissue. It is not resulting from a chromosomal fusion (maternal / paternal chromosomes) but it derives from a cell of only one organism. As such, clones are anomalous biological individualities since their genotype is a copy of the nucleus of a donor. [back](#)

(10) Let us consider the case of 'Dolly', the first mammal cloned in 1996 (Revel 2000). We do know that: 1) Dolly's mitochondrial DNA comes from the egg donor (usually mitochondrial DNA comes from the mother); 2) Dolly's immune system genes are not developed at the embryo stage (Dolly has a different immune system from her mother). According to biology, environmental factors influence the phenotypic expression of a genotype. "Phenotypic identity requires identity between genotypes, which cloning can ensure, and identity between environmental interactions, which it cannot ensure." (Eisemberg, 1999). [back](#)

(11) Rather than risk the one in four chance of conceiving a child who will suffer a short and painful existence, the couple considers the alternatives: to forgo rearing children; to adopt; to use prenatal diagnosis and selective abortion; to use donor gametes free of the recessive trait; or to use the cells of one of the adults and attempt to clone a child. To avoid donor gametes and selective abortion, while maintaining a genetic tie to their child, they opt for cloning. Wachbroit R., 1997. On this topic see: *Cloning Human Beings*. Report of the U.S. National Bioethics Advisory Commission (NBAC), 1997; and John A. Robertson, (March 1994), Daniel Callahan 1997 [back](#)

(12) The French report over the cloning humans' problem implications (*Reponse au President de la Republique au sujet du clonage reproductif*. Juillet 1997) analysed the problem implications of cloning. In a recent article, Kithara-Frisch said: "The French Report calls our attention on three kinds of harms that may affect children produced by cloning. First, genetic identity, by causing the same body and face appearance, would deprive the child of an important physical support for her personal identity. (...) Second, the personal autonomy of these children would also be

threatened since their biological characteristics would be due not to chance, as in sexual reproduction, but to the choice of the person responsible for the cloning. (...) Moreover, it also calls our attention on how similar ethical problems may already arise from the spreading practice of prenatal and preimplantation genetic screening. For here too, biological characteristics of the offspring are being chosen by the parents, disregarding thereby the autonomy of the children born as a result of this screening." (Kitahara-Frisch J., "The Children Born from Human Cloning", *Eubios Journal of Asian and International Bioethics* 8, 1998:83-84) [back](#)

(13) Biologically speaking, it would be hard to defend the claim that cloning would be a good alternative to other infertility treatments because of its ineffectiveness. But, again, this is a technical problem and not a moral argument to oppose to HRC. [back](#)