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CLONING, PARENTHOOD, AND GENETIC RELATEDNESS

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ABSTRACT
In this paper I examine what I take to be the best case for reproductive human cloning, as a medical procedure designed to overcome infertility, and argue that it founders on an irresolvable tension in the attitude towards the importance of being 'genetically related' to our children implied in the desire to clone. Except in the case where couples are cloning a child they have previously conceived naturally, cloning is unable to establish the right sort of genetic relation to make couples the parents of their cloned child. If anybody is the genetic parent of a cloned child it is the natural parent(s) of the DNA donor. Paradoxically, in order to resist the claims of the parents of the donor to the cloned child, the argument for human reproductive cloning must place more weight on the intention to parent a child, than we do in cases of ordinary reproduction. It must insist that the parental relation is established by the intentions of the couple who bring a clone into the world and not by their genetic relation to the child. The emphasis placed on intention as establishing the parental relationship works to undermine the justification for cloning in the first place. For cloning to play a useful role as a reproductive technology, it must allow couples to become parents who could do so no other way. However, to the extent that intention is sufficient to establish parenthood, adoption or surrogacy, which are existing alternatives to cloning, will serve equally well to allow couples to become parents.

INTRODUCTION

Numerous authors have tried to give substance to the intuition that human cloning would violate something fundamental to our sense of the dignity of persons; others have argued that cloning would risk, or even necessarily involve, unjustifiable harms to the clone, or the person cloned.[1] My approach to the issue will be slightly different. Instead of arguing directly against cloning, I will examine what I take

[1] An early survey of potential issues is J.A. Robertson. The Question of Human Cloning. *Hastings Cent Rep* 1994; 24(2): 6–15. This paper is notable for denying the likelihood of cloning mammals by SCNT in 'even the mid-range future' (p. 6); a vivid reminder of just how rapid technological development in the area is. Useful collections of post-'Dolly' discussions of cloning include, B. MacKinnon, ed. 2000. *Human Cloning: Science, Ethics, and Public Policy.* Urbana and Chicago: University of Illinois Press; G. McGee, ed. 2000. *The Human Cloning Debate.* Berkeley, California: Berkeley Hills Books; M.C. Nussbaum & C. Sunstein, eds. 1998. *Clones and Clones: Facts and Fantasies About Human Cloning.* New York and London: W. W. Norton & Company.

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to be the best case for reproductive human cloning, as a medical procedure designed to overcome infertility, and argue that it founders on an irresolvable tension in the attitude towards the importance of being 'genetically related' to our children implied in the desire to clone.

SOME INITIAL DISTINCTIONS

Discussions of the possible applications and ethics of human cloning typically distinguish between two different sorts of cloning, with different motivations: 'therapeutic' and 'reproductive' cloning. 'Therapeutic' cloning is hypothetical cloning of an individual for the purpose of procuring tissues from the clone which will serve some therapeutic purpose in relation to the person cloned. 'Reproductive' cloning aims at the creation of a whole person in order to satisfy the reproductive desires of some couple or individual. Strictly speaking, 'embryo splitting', a process already available in some IVF clinics, whereby a fertilised ova is allowed to divide and then is split so as to produce a number of viable zygotes, is a form of reproductive human cloning, because it may result in the birth of a number of individuals with identical genetic make-up. However, this is not the technology that springs to the minds of most people when they hear the phrase 'human cloning'.[2] While it raises a number of important issues, this technology is arguably continuous with existing IVF technologies and may be defended as the generation of identical twins by artificial means.[3] What most people think of when they think of human cloning is the cloning of an existing or past individual using DNA extracted from cells taken from their body. That is, human cloning via somatic cell nuclear transfer (SCNT).

In this paper I will be concerned to examine only arguments for reproductive cloning via SCNT. Therapeutic cloning arguably raises more, and more difficult, issues than reproductive cloning because it typically involves the creation of a human embryo with the intention of later destroying it, but also because the potential benefits it offers, in terms of life-saving medical procedures, are so great. In comparison, the issues raised by reproductive cloning are perhaps more straightforward. Reproductive cloning aims at the birth of a child and need not involve the intentional destruction of human embryos – so this major source of objections, at least, does not apply.[4] On the other hand, the 'benefits' of human cloning for reproductive purposes are not so obvious that it is likely that they will provide reasons to allow it if it turns out that there are significant moral dangers involved. One would expect, therefore, that the question of the ethics of reproductive human cloning would be more easily resolved. Despite this, argument about the matter continues to rage. My contribution to the debate will be oblique. I shall argue that the circumstances in which there is a strong argument for cloning as a reproductive technology are much, much, narrower than is currently recognised.

In order to understand how this conclusion may bear on the debate about human cloning, we need to distinguish the ethics of *research* into human cloning from the ethics of the act of creating a clone itself. There are questions about the ethics of researching a technology that are distinct from those involved in the decision of whether to employ it once it exists. Most obviously in this case, given the large number of urgent social and medical challenges facing humanity, especially in the Third World, which would benefit from research into their amelioration, is it ethical to devote scientific energies to researching human cloning?

Recognising that the cases in which human cloning might be useful as a reproductive technology are very rare – even rarer than has been suggested in the literature – will have few, if any implications for the ethics of human cloning itself. However, it has obvious implications for the question of the ethics of funding – especially public funding – for cloning research. The ethics of funding research depends importantly on the extent to which it contributes, or might contribute, to meeting important human

[2] Robertson, *op. cit.* note 1, p. 6.
[3] Ibid.

[4] I am presuming of course that cloning technology will improve to such an extent that prohibitively large numbers of embryos need not be created to produce one clone. Note also here that we currently tolerate the creation and eventual destruction of a certain number of human embryos in the course of existing IVF procedures. For that matter, even a 'natural' pregnancy may have involved the creation and destruction of any number of embryos before a pregnancy comes to term.

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needs. If it turns out that cloning could only do this in a tiny fraction of cases, that will mitigate against funding for cloning research.

THE CASE FOR HUMAN REPRODUCTIVE CLONING

Much of the public's interest in, as well as hostility towards, cloning derives from misconceptions about what the technology involves. Contrary to popular belief, cloning technology will not allow the copying or replication of persons. Those people who hope to generate identical copies of themselves or of some human archetype through cloning will inevitably be disappointed, as environmental and cultural factors will result in every clone becoming a different and unique individual.[5] The main reason for popular interest in cloning as a reproductive technology turns out to be misplaced; the technology simply cannot do what is required of it. It can only produce children with the same genotype, not the same character. Furthermore, the desire to produce a child with our own genotype, presumably for reasons of curiosity or vanity, seems insufficient to justify the use of scarce medical resources to this purpose.[6]

In fact it is quite difficult to imagine a case for reproductive human cloning where the technology is being used to meet an important human need. Arguments for cloning as a reproductive technology must rely on cases where couples are unable to become parents by any other means. Given that couples can always become parents by adopting a child or, more controversially, by arranging for a child to be conceived for them to adopt, arguments for cloning must rely on the importance we place on parents being able to have children that are genetically related to them.[7]

There are three scenarios wherein reproductive human cloning might be thought to have a useful role to play.

The first is where one or both members of a heterosexual couple are unable to make a genetic contribution to the genotype of a child because of their failure to produce or possess viable gametes (i.e. sperm or ova).[8] In this case, cloning via somatic cell nuclear transfer would allow the couple to bring into being a child that is genetically related, indeed genetically identical, to *one* of them.[9]

If the woman is capable of producing gametes, while the man is not, then the couple could use the man's somatic DNA and the woman's ova in the cloning process, which would mean that she would have made a material contribution to the birth of the child and also have contributed a small amount of mitachondrial DNA. If she is capable of bringing the child to term then she could also be the gestational mother of the child. This arrangement would arguably allow both parents to feel that they had both played an important part in the creation of a child that was genetically related to at least one of them.[10]

However, if the woman is unable to bring the child to term, the couple will need to make use of a surrogate mother. If she is also unable to produce gametes, then cloning will only make it possible for a couple to raise a child genetically related to one of its parents, without the other partner playing a material role in this process.

It is important to note in relation to this scenario, that, except in the case where neither partner is capable of providing viable gametes, other techniques,

[5] B. Rollin. Send in the Clones . . . Don't Bother, They're Here. *J Agric Environ Ethics* 1997; 10: 25–40; J. Harris. 1999. 'Goodbye Dolly?' The Ethics of Human Cloning. In *Bioethics: An Anthology*. H. Kuhse & P. Singer, eds. Oxford: Blackwell: 143–152.

[6] It is easy to imagine medical or therapeutic reasons to desire the birth of a child with a certain genotype, for instance, to serve as a source of tissue for transplant or other therapy, but these are arguments for *therapeutic* cloning, which I am not discussing here.

[7] See C. Strong. 2000. Cloning and Infertility. In *The Human Cloning Debate*. G. McGee, ed. Berkeley, California: Berkeley Hills Books: 184–211; Harris, *op. cit.* note 5, pp. 148–149; D.W. Brock. 1998. Cloning Human Beings: An Assessment of the Ethical Issues Pro and Con. In *Clones and Clones: Facts and Fantasies About Human Cloning*. M.C. Nussbaum & C. Sunstein, eds. New York and London: W. W. Norton & Company: 141–164. The strength of the desire for children who are 'genetically related' is likely to vary amongst individuals and across cultures. Some cultures, especially in Asia and the Middle East, may place a very high value on the continuation of the family line through the birth of children who are genetically related to their parents.

[8] One important case where parents are unable to provide 'viable' gametes is where both members of a couple carry a recessive gene for a lethal or severely debilitating genetic condition, such that they are unwilling to risk conceiving a child by 'normal' means. In this case, however, conception using existing IVF technology and pre-implantation diagnosis would allow them to conceive a child with each other and avoid the risk of a child inheriting the lethal genes. For cloning to serve a useful role, this option must be ruled out for some reason.

[9] Strong, *op. cit.* note 7, p. 185.

[10] Ibid: 190.

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such as the use of donor sperm or of donor ova – and if necessary the aid of a surrogate mother – could just as well achieve the same result: a child that was genetically related to one of its (social) parents.

The second scenario where cloning might be thought appropriate is perhaps a version of this first scenario, but where the inability to provide viable gametes results from a same sex couple, or perhaps even a single person, being unwilling to allow another person to make a genetic contribution to the process of reproduction.[11] Perhaps one of the strongest cases for cloning is that it might allow lesbian couples an opportunity to bear and raise children that were genetically related to at least one parent, without the need for a genetic contribution from a man.[12] One member of a couple might provide the genetic material for the nuclear transfer, the other provide the ovum and carry the child. In this way both women would make a substantial contribution to the health and character of the child and no men need be involved.[13] The couple might have personal, psychological, or perhaps political reasons, for wishing not to involve a man in the process of conception. Of course, in a male dominated research and medical environment, it is likely that the assistance of men will be essential in other ways. However, this might be more acceptable to some women than employing donor sperm.[14] Similarly, a single woman might wish to have a child without a genetic contribution from any other person.[15] Cloning herself using SCNT and then gestating the resulting embryo would allow her to do this.[16]

Again, note that unless both members of a lesbian couple, or a single person who wishes to clone themselves, are unable to provide viable gametes, they will equally well be able to have a child that is related to one of its parents through the use of donor gametes. Any defence of the value of cloning in these circumstances must therefore rest on the moral weight of their desire not to involve another person – or perhaps more specifically, a man – in the process of conception. I will argue below that this desire is of negligible moral weight. Furthermore, unfortunately, the political reality is that there is unlikely to be much support for cloning on the grounds of its purported utility for homosexual and single prospective parents. Conservative and religious objections to homosexual and single parenting will most likely ensure that the public justification of cloning refers to the needs of heterosexual couples in the other scenarios presented here.

A third scenario involves a couple who have already conceived a child and who are unable to conceive another by any means. By cloning their existing child they could provide him/her with an identical sibling, that would be related to both his/her parents.[17] This option would be available even after the death of the original child, as long as they could source DNA from a cell recovered after death or stored prior to death.

The justification of human cloning as an assisted reproductive technology therefore appeals to the desires of a small number of persons in unusual circumstances to rear children that are genetically related to (usually, only one of) them. If either

[11] T.F. Murphy. 2000. Entitlement to Cloning: A Response to Strong. In *The Human Cloning Debate*. G. McGee, ed. Berkeley, California: Berkeley Hills Books: 212–220.

[12] The possibility that lesbian couples might have good grounds to use cloning technology is mentioned in P. Kitcher. 2000. There Will Never Be Another You. In *Human Cloning: Science, Ethics and Public Policy*. Barbara McKinnon, ed. Urbana and Chicago: University of Illinois Press: 53–67. However, in his treatment of this scenario, Kitcher neglects the possibility that lesbian couples might prefer to use cloning rather than donor sperm because of a desire to avoid a male contribution to the pregnancy. Similarly, Timothy Murphy's defence of the rights of same sex couples to use cloning to produce children neglects the particular (political) benefits for lesbian couples. See Murphy, *op. cit.* note 11, pp. 212–220.

[13] In fact, because there will be a small contribution from the mitachondrial DNA of the (other?) mother's ova both women might also be said to play a role in determining the genetic make-up of the child.

[14] Cloning seems less likely to be of value to male homosexual couples. While cloning would allow a gay male couple the option of having a child that was genetically related to one of them, without a direct genetic contribution of a woman, creating the clone will still require a woman to provide an ovum and also, for the foreseeable future, to bring the child to term. The social/political motivation for the attempt to create a child without involving a member of the opposite sex is therefore missing.

[15] My thanks to Patricia Peterson for drawing this possibility to my attention.

[16] Cloning would allow a single man to reproduce himself without a genetic contribution from another person (with the exception of mitachondrial DNA) but would require use of a donated denucleated ova and the assistance of a surrogate mother. Given this, it is difficult to see that this process has many advantages over reproduction involving conception with a donor ova and the assistance of a surrogate mother, or indeed natural reproduction.

[17] In this case, unlike those above, *both* parents are genetically related to the cloned child.

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partner is capable of providing viable gametes then reproduction involving the use of donor gametes (and perhaps a surrogate) would equally well allow a couple to bring into being a child that was genetically related to one of them. Only if neither partner is capable of providing viable gametes will cloning be the only way to satisfy this desire.

GENES, RELATEDNESS AND GENETIC PARENTHOOD

In order for our concern for parents' desires to have children who are genetically related to them to ground an argument to justify funding for cloning research, two things must be true; first, the desire of parents to have children who are genetically related to them must be important enough to justify the use of the resources required to satisfy it *and*, second, cloning must produce a child that is genetically related to the couple in the appropriate way.

For the purposes of this paper I am going to assume that there *is* something important about the relation of genetic parenthood. That is, that we are right to care for our children because they are *our* children, in the sense that we are their genetic parents.

In fact I believe this assumption is (very) questionable and that the social relation of parenting, marked by the provision of love and care, is more important to the well-being of both parents and children than any genetic relation and should carry most of the weight in establishing a parental relationship. There are many individual cases where parents love and care for their adopted children, who have no genetic relation to them, as much and as well as any natural parent. Furthermore, the children do not seem to suffer by virtue of being cared for by parents other than their genetic parents. Similarly there have been many societies where a genetic relationship has not been the major factor determining the parents of a child, where children have been cared for by other relatives, or adopted out as a matter of course, or cared for communally. All of which suggests that the genetic relation – if any – between parent and child is much less important in the establishing of meaningful relationships between adults and children than is commonly believed.

Nevertheless, it is clear that many people do feel that there is something special about having children that are related to them 'by blood'. Widespread support for, and public funding of, IVF programs reflects this concern.

Further, I am going to assume that this concern is sufficiently well grounded to justify spending public funds on research into technologies that might allow parents, who otherwise might be unable to do so, to have their 'own' children. Again, I am personally inclined to doubt this, for much the same reasons. If our current concern for genetic ties is excessive then so too is the amount of effort we, as a society, put into trying to make them possible. Moreover, the level of scientific research and medical effort dedicated to overcoming infertility through IVF and other medical technologies may contribute to harmful cultural preconceptions: that adoption can never be as satisfying as rearing one's 'own' child, that childlessness is the worst thing that can happen to a couple, and that women are essentially defined by their reproductive role. It also risks contributing to and reinforcing the pernicious genetic determinism that grounds public support for these technologies, by publicly affirming the superiority of genetic ties.[18] Yet, regardless of my own reservations, IVF programs are not just popular, but publicly funded. Clearly most people do think that parents' desires to have children who are genetically related to them justifies devoting scientific and medical resources to this project.

It is the relevance of this belief to the case for reproductive cloning that I wish to challenge here. Are parents in the situations described above 'genetically related' to their child in such a way as should engage the intuitions we have about the importance of genetic parenthood in normal circumstances?

In assessing the nature and significance of the genetic relation between persons and their clones it is, I think, difficult to escape the effects of an influential 'informational' metaphor in contemporary understanding of the role and significance of genes. Talk of genetic make-up as a 'blueprint', 'code' or

[18] Jean Bethke Elshtain. 1998. To Clone or Not to Clone. In *Clones and Clones: Facts and Fantasies About Human Cloning.* M.C. Nussbaum & C. Sunstein, eds. New York and London: W.W. Norton & Company: 181–189.

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'program' for an individual encourages us to measure the relation between two individuals through comparison between their genetic 'blueprints', with the result that two individuals with the same genes, i.e. clones, are maximally related. This would suggest that cloning is the ideal way to produce a child that is genetically related to (one of) its parents. Indeed, from the perspective of someone in the grip of this informational metaphor, it seems to be a *better* way to have a child than through normal procreation.

However, as a number of writers have observed, there are deep problems with understanding DNA as a code, blueprint or program for anything.

To begin with, these metaphors do little justice to the specificity of the biological and chemical processes underlying phylogeny and evolution. If DNA is the 'code', what is the language? If it is a 'program', what is the 'machine' upon which it runs? If it is a 'blueprint' then who or what does the building? Answers have been suggested to all of these questions, but in providing them there is a tendency to sacrifice the detail and distinctiveness of the actual processes involved in the service of the metaphor. Over reliance on the informational metaphor may lead us to neglect the many ways in which genes are *not* like a blueprint, code or program.[19]

Describing DNA as a code, etc, also tends to exaggerate the importance of genes and to disguise the role of the environment in the development of the organism. It encourages us to see individuals' genetic make-up as determining their character (phenotype), which is then merely modified by the environment in which they grow up. In fact the phenotype of an individual is always the result of an interaction between his/her genetics and the environment, in which neither of these should be thought of as prior to the other. Genes 'code' for a phenotype *in an environment*. In a different environment, the 'same' genes code for a different result. Thus without specifying an environment we can say nothing about the future of an individual, regardless of our knowledge of his/her genetic 'code'.[20] Furthermore, even where genetics does play a large role in determining a character trait, often the best way to ensure a particular phenotypical outcome, such as, for instance, a child with a 'high IQ', is to modify the environment in which he or she is raised. The informational metaphor can blind us to the essential role played by the environment in which an organism develops.

The informational metaphor also leads to paradoxical results when we consider the question of who are – or perhaps should be – the parents of clones. The genetic relation between DNA donors and their clones is *not* the relation that parents have with their children. Normally a genetic parent shares only approximately half their genes with their child, but clones share *all* of their DNA with the person from whom they were cloned.[21] As we noted earlier, the genetic relation between the DNA donor and their clone is the same as the genetic relation between identical twins. Yet we do not think that the relation identical twins have is such as to ground the claim that they are each other's genetic *parents*. A relationship of genetic identity is not the right sort of relationship to ground a claim to parenthood. Clones share *too much* genetic material with their donors to be their children.

Indeed, we do not even need to be concerned about the case of cloning to perceive problems with the informational model of genetic relatedness. As Barbara Katz Rothman has observed, the 'genetic relation' between siblings, who share roughly half their DNA with each other, is the same as the relation between parents and their children.[22] Yet this

[19] Barbara Katz Rothman. 1998. *Genetic maps and human imaginations: the limits of science in understanding who we are.* New York: Norton & Co: 21–25.

[20] Ibid.

[21] In fact the description of the genetic relation between parents and children given here and below is not strictly speaking accurate. Given that all human beings share the vast majority of their DNA with each other (as well as with rabbits, fish and bacterium), 'half their genes' here can only refer to the genetic variation within the human population. Furthermore, this Mendelian assumption about the genetic relation between parents and their children presumes that choice of mates is random. If people tend to choose partners who share genetic similarities with them, then each partner will tend to share more than 50% of their genes, within the range of human variation, with their offspring. There is some evidence that this is the case. See L. Dicks. Like Father, Like Husband. *New Sci* 2002; 2 February: 26–29. (My thanks to Ashley Sparrow, of the University of Canterbury, for drawing my attention to this paper). Nevertheless, the basic point – that the relation between parents and children is not one of genetic identity – stands.

[22] Barbara Katz Rothman. 1989. *Recreating Motherhood: Ideology and Technology in a Patriarchal Society.* New York and London: W.W. Norton & Company: 37–39.

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relation is not one of parenthood. 'Genetically', the offspring of my identical twin with my partner will have the same relation to me as my own children do, yet I do not consider them to be my children. A concern with genetic similarity will even allow total strangers to be 'more related' to us than our own children. While, statistically, my child is likely to have a phenotype (partially) determined by the expression of 50% of my genes, their character may in fact reflect the expression of many more, or less, of my genes. Moreover, while the particular set of genes that my cells contain – my total genetic make-up – is almost certainly unique, the individual genes within that set are not. Except for the small number of mutations that occur with each conception, I share all my individual genes with thousands, and probably millions, of other people. Any of these people may in fact have more of 'my' genes than my own children.[23] If this should chance to happen, then according to the informational metaphor I am more related to such a person than I am to my own children.[24]

The problem with the informational metaphor is that it ignores the role played by history in determining even our sense of *genetic* relatedness. What is missing in these cases is the appropriate *causal* connection between the genetic make-up of the parties involved. Our genetic relation to others is not merely a question of the genes we happen to share, but also a question of the history of how we came to share those genes.[25] Until relatively recently these histories involved a series of couplings. They took the form of family trees wherein the points of branching necessarily involved coitus and conception.

However, the relatively primitive technology of artificial insemination by donor separated coitus from conception.[26] But until the advent of cloning, conception at least was an essential part of any reproductive endeavour. Our genetic relation to others was a question of who had conceived whom. The invention of cloning establishes the possibility of a radical break in these histories – a birth without a conception.

The existence of this break poses a genuine question as to who are, or should be, the parents of a cloned child.[27] Our ordinary intuitions about genetic relatedness are unreliable here because the normal connection between genes and the history whereby they are transmitted has been severed.[28] As Alpern puts it, ordinarily, 'the meaning and significance of having (one's own) child essentially involves reference to the child's *genesis*; that is, reference not only to patterns of genes, but to the processes and activities through which a child comes to be.'[29] The 'processes and activities' through which a child cloned by SCNT is brought into existence are so far removed from those ordinarily involved in becoming a parent that it is difficult to know if they sustain a genetic relation at all, let alone a parental relation. The open nature of this question is disguised by a reliance on the informational metaphor, which implies that sharing the 'same' genes is enough to make two individuals genetically related.

CLONING AND PARENTAL INTENTIONS

However, even if sharing the 'same genes' was enough to establish *a* genetic relation between a DNA donor and their clone, it would not be enough to secure a claim to parenthood by the DNA donor

[23] Barbara Katz Rothman, *op. cit.* note 22, pp. 66–71.

[24] K.D. Alpern. 1992. Genetic Puzzles and Stork Stories. In *The Ethics of Reproductive Technology*. K.D. Alpern, ed. Oxford: Oxford University Press: 147–169. Although it does not mention cloning, and was written before human cloning was thought to be a serious possibility, Alpern's discussion of the significance of an engineered relation of genetic identity is eerily prescient and extremely relevant today.

[25] Ibid: 160–164. See also Avery Kolers. Cloning and Genetic Parenthood. Camb Q Healthc Ethics 2003; 12: 401–410. Unfortunately, I only became aware of Kolers' excellent paper, which also deals with the complexities of our concept of genetic relatedness, after submitting this paper for publication. Revising this paper to take account of Kolers' arguments would have required extending it beyond the length appropriate for this journal and I have therefore chosen to publish it in its original form except for the inclusion of references to Kolers where they illuminate the argument.

[26] This development itself has stripped away some of the context of reproduction that explains why it is important to couples to have 'their own' children. For instance, children conceived using artificial insemination are no longer a direct expression and result of sexual intimacy between their parents. Nor, if conception involves the use of donor gametes, need it affirm the love and mutual regard of the (genetic) parents. See Strong, *op. cit.* note 7, pp. 87–88.

[27] For a discussion of the plausibility of various basis' for parenthood, see, A. Kolers & T. Bayne. 'Are you my mommy?' On the Genetic basis of Parenthood. *J Appl Philos* 2001; 18(3): 273–285.

[28] Alpern, *op. cit.* note 24, pp. 160–164. See also Kolers, *op. cit.* note 25.

[29] Ibid: 163.

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of a clone – let alone their partner. Any argument about genetic relatedness which purports to establish that I am the parent of my clone will ground a stronger claim by my parents to be the parents of my clone, given that they have the paradigmatic version of this relation to the clone. Even if I am related to my clone, my parents are *more* related in the appropriate way. That is, 'genetically', the parents of my clone are my parents.[30]

We might therefore imagine a scenario where the natural parents of the person who had themselves cloned sued for custody of the clone. Perhaps they do not feel that their (natural) child is a suitable parent for any child, let alone a clone. Or perhaps, on seeing a child who looks just like their own daughter or son, they feel a desire to exercise their 'parental rights'. If it is genetic relatedness that grounds a claim to parenthood then they would surely have a better claim than the DNA donor. Any suggestion that the DNA donor should be granted custody of the clone against their own parents, on the grounds that they (the donor) are 'more related' to the clone, risks the ludicrous conclusion that I am more the parent of my identical twin than are my own parents.

In order to resist these deliciously implausible conclusions, defenders of cloning may wish to insist that in the case of a cloned child it is the *intention* to bring the child into the world that makes the donor the parent (rather than the donor's parents). What makes my clone, or my partner's clone, our child is that we have made the decision to bring it into being with the intention of raising it as our child. Couples might emphasise the effort to which they have gone to create a child, and the psychological and emotional significance of the history of this project, to lend weight to their claim to stand in a more parental relation to the child than the genetic parents of the DNA donor.

There is clearly something to be said for this move. If the parents of a clone were the parents of the DNA source, or even the person who is cloned, then there is a real risk that any of us could become parents unintentionally when someone clones our children, or perhaps us, without our knowledge by using DNA obtained surreptitiously. Most of us would, I suspect, object if told that we had become a parent without doing anything at all because we, or our children, had been cloned without our knowledge, let alone consent. We would object even more strenuously if we were further expected to fulfil our 'parental duties' and look after and support the child. What seems to be missing in cases like this is any intention on the part of the donor to become a parent, or even to participate in any activity that might reasonably be held to involve a foreseeable risk of becoming a parent.

Insisting that intention plays a crucial role in determining who are, or should be considered, the parents of a clone is all very well. However, we should note that, legally speaking, becoming a genetic parent through coitus is typically *not* a question of intention. In many jurisdictions, claims for child support payments can be made against a father who went to substantial effort in relation to contraception to *avoid* fathering a child. The genetic relation of being a natural parent is sufficient to ground a responsibility for the child, regardless of intention.

Paradoxically then, in order to resist the claims of the parents of the donor to the cloned child, this argument for human reproductive cloning must place *more* weight on the intention to parent a child, than we do in cases of ordinary reproduction. It must insist that the parental relation is established by the intentions of the labours of the couple who bring a clone into the world and not by their genetic relation to the child.

The emphasis placed on intention as establishing the parental relationship therefore works to undermine the justification for cloning in the first place. For cloning to play a useful role as a reproductive technology, it must allow couples to become parents who could do so no other way. However, to the extent that intention is sufficient to establish parenthood, then adoption or surrogacy, which are existing alternatives to cloning, will allow couples to become parents equally as well. These projects also involve an extended effort from prospective parents and generate a history linking them to the particular child that results. Indeed, the nature of the project of becoming a parent through surrogacy or adoption is much closer to that embarked upon by ordinary parents because, unlike the case of cloning, the prospective parents experience the uncertainty that

[30] Harris, *op. cit.* note 5, p. 148. See also Kolers, *op. cit.* note 25.

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results from an act of conception.[31] In the case of cloning the genotype of the child (with the exception of the possible contribution of mitochondrial DNA from the donor ovum) is fixed from the beginning of this project. This is a substantial disanalogy with the ordinary parental relationship which actually weakens the claim of the source of DNA for a clone to be its parent.

MIGHT CLONING STILL SERVE SOME USEFUL PURPOSE?

Defenders of the utility of cloning may at this point concede that it is intention that plays the primary role in explaining why the donor and her/his partner are the parents of a clone, but insist that couples nevertheless do wish to have *a* genetic relation to their child if possible, and that a clone is *more related* to them than any other child they could have.

If this defence of cloning works at all, it only works in the cases where neither member of a couple has any viable gametes, or where a couple is cloning a child they have previously conceived using gametes from each of them. In any case where one member of a couple has viable gametes and can produce a child through conception using donor sperm or ova, then *this* child is more related to them in the relevant sense required to establish parenthood, than their clone. This child is only related to one of its 'parents', but then so too is a cloned child. Moreover, the nature of the relation between the parent and a child conceived using donor gametes is more clearly that between parent and child than is the relation between the DNA donor and their clone.

In cases where neither member of a couple possesses viable gametes, cloning will allow them to have a child that arguably has some genetic relation to one of them, which an adopted child will not.[32] But, as I argued above, they will only be this child's *parents* on the proviso that their intention to be so is sufficient to make them so. The genetic relation which they might achieve by cloning – and which will exist only between one member of the couple and the child – will be that of (identical) sibling rather than parent. Given that cloning can only achieve this unorthodox genetic relation between one member of the couple and the child, and that they can only assume a parental relation if the alternative of adoption would also allow them to become a parent, the argument for cloning on the basis of this relationship must be said to be weak.

The possibility of cloning establishing a genetic relationship of the sort that would normally justify any claim to be a parent is confined to the case where a couple can clone a child they have previously conceived.[33] Even here, as we have seen, we may have reason to doubt that the causal/historical relation between them and their child is sufficient to establish that such a child was related to them in the appropriate fashion.[34] Again, a lot of weight must be placed on the question of intention, lest couples be at risk of acquiring parental duties when others clone their children.

Defenders of cloning may still wish to insist that cloning is a valuable reproductive option that should be made available as an alternative to artificial insemination by donor or use of donor ova. What is perhaps important to many parents is not the particular nature of their genetic connection to their child but that no-one else should have one. They do not want to rely on a genetic contribution from a third party. They cannot bear the thought that their child is someone else's child.[35]

[31] In the case of adoption this uncertainty may be reduced if prospective parents can select the child they wish to adopt. Even in this case the genetic inheritance of the child will to a certain extent represent an unknown. In many cases of adoption, parents will also confront the uncertainty of not knowing which child may become available for adoption.

[32] But note the reservations expressed above about whether donors and their clones have any genetic relation at all – which explain why this matter remains arguable.

[33] Note that if the argument for couples' rights to have access to a technology to allow them to become parents is grounded in the importance we place on participation in child rearing, or – more plausibly – in participation in conception, their rights to access in this case will be weak, because they have already conceived, and perhaps raised, a child. It is implausible to think that the 'right' to have children extends to the right to bring them up successfully.

[34] Alpern, *op. cit.* note 24, pp. 160–164. An important difference between a child produced through cloning and the original child that is being cloned for instance, is that the cloned child does not represent a *mixing* of the genetic character of its parents, so much as the reproduction of the result of a previous such mixing. This itself might be thought to constitute a significant difference in the process whereby the child is brought into being.

[35] Strong, *op. cit.* note 7, pp. 202–204.

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However, as I have argued, their cloned child is at the very least the child of the natural parents of the donor. That is, 'genetically speaking', a clone is already someone else's child.[36] This may be acceptable to some couples, as they know and presumably like their parents. However, note that the genes that the parents of the DNA donor contribute came to them from their parents, and their four grandparents, and their eight grandparents, etc. No matter how precious we are about tracing our family tree, there will always come a point where we can no longer track the origins of genes that we possess. Ultimately, therefore, all of our genes come to us from strangers – and this will of course be true too of clones. Indeed the whole project of trying to 'own' our children's genetic make-up is misguided. Our total genetic make-up is likely to be unique but 'our' genes are not and these are all that we can hope to pass on to our children. We all share all these genes with the entire human gene pool (and with most other living things besides). Thus while it may avoid the need to use donor gametes, cloning will not allow couples to escape their child having genes that come to them from strangers. The argument for the potential value of cloning on these grounds is correspondingly weak.

ALTERNATIVES TO CLONING

In any case other than that where couples are cloning a child they have already conceived, then, aspiring parents are equally well able to become parents through the use of donor gametes, or adoption, or perhaps (and more controversially) by arranging to have a child conceived for them for the purposes of adoption.

Our assessment of the worth of cloning as a reproductive technology will therefore turn partially on our attitudes towards conception using donor gametes, the availability of children for adoption in a society, and on our feelings about the ethics of conceiving children for the purposes of adoption. If we object to the use of donor gametes in reproductive procedures, or if there are few children available for adoption and we believe it unethical to conceive a child for the purposes of adoption, then the case for reproductive cloning is stronger than I allow here.

The availability of children for adoption is a contingent matter that will depend on the society in which the question is asked. In societies where few children are available for adoption then childless couples' desires to have children must be served by other means. However, note that it may be hard for advocates of reproductive human cloning to object to the use of donor gametes, and even to the conceiving of children for the purposes of adoption, and still defend cloning. For cloning to be an option in several of the scenarios described above, the use of donor gametes (ova to be de-nucleated) and/or a surrogate mother is necessary. If these procedures are unacceptable then so too will be cloning in these cases. It is also hard to see how there is much difference between a scenario in which a child is brought into being, through the use of donor gametes (although not the genetic material therein) and a surrogate mother, in order to be turned over to another couple, and the situation where a child is conceived and gestated for the purposes of adoption. Indeed, except in the case where a couple clone their own child, cloning already in a sense always involves conception for the purposes of adoption, in that the cloned child is deliberately brought into being with the intention that it will then be taken from its 'genetic parents'. Those who would defend the utility of reproductive human cloning may therefore be hard pressed to object to the conceiving of children for the purposes of adoption using more traditional methods.

Thus while there are profound ethical and policy issues associated with the existing technologies, to which cloning might serve as an alternative, it is highly unlikely that cloning will not raise these isues to the same extent. This mitigates against the idea that we have strong reasons to pursue human cloning as a reproductive technology.

[36] In passing, we are now in a position to note that the case that I identified earlier as perhaps the most promising justification for reproductive cloning, that of a lesbian couple who wanted to have a child without requiring a genetic contribution from a man, is much weaker than first appeared. Because the genetic make-up of the clone will be identical to the donor, who presumably did have a male parent, clones will always have 'male' genes. Indeed the whole idea of distinguishing between 'male' and 'female' DNA is misguided. Except for those genes that can be linked to one of the sex chromosomes there is no way to distinguish 'male' from female human inheritance.

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CONCLUSION

The only situation where cloning can unambiguously serve couples' desires to have children, where existing reproductive technologies cannot, is where parents who are unable to conceive wish to clone a child they have previously conceived naturally. The case for cloning as a reproductive technology is therefore far far weaker than is generally recognised.

This conclusion will have few, if any, implications for the question as to whether or not it will be ethical to clone human beings once it becomes possible and safe to do so. Establishing that there are few, if any, good reasons for wishing to have a child through cloning is not the same as establishing that there are reasons not to do it. Once cloning becomes possible many people may want to use cloning to reproduce themselves. Some of them may be motivated by a desire to be genetically related to their children. Once the technology exists, it may be wrong to prevent them from attempting to realise this desire, even if we firmly believe it to be misguided, or that cloning is ill suited to this purpose. Nothing I have said here has been addressed to this question.

However, the scarcity of good arguments *for* cloning does have significant implications for the ethics of funding for research into human cloning as a reproductive technology. Given the relative scarcity of medical and scientific resources and the many other important projects to which they could be directed it is arguably unethical to devote funding to researching a technology which will serve important human needs in only a very small number of cases.

This is not as strong a conclusion as many opponents of human cloning would hope for. The argument I have explored here can ground only the argument that funding for research into cloning is unethical in the same way as research into (purely) cosmetic surgery is unethical. In a world of relative scarcity of resources for medical research we simply cannot justify it.[37] But it is cloning's lack of utility rather than its ethics that motivates this conclusion.

This is not to say that that there may not be other reasons why cloning might be unethical. Indeed, achieving a proper understanding of what cloning can and cannot achieve as a reproductive technology may also have implications for our overall assessment of the ethics of cloning itself. Any such assessment would require consideration of a multitude of arguments which are beyond the scope of this paper, but are explored in the large and polarised literature that exists around human cloning. Meanwhile, in the absence of a public consensus on the ethics of human cloning, a realistic appraisal of how little the technology has to offer may serve to avoid or at least defer any ethical questions it may raise.

[37] In particular it may be unethical to devote *public* funding to researching cloning. The ethical standards for the use of public funds seem to be higher than those for the use of private resources because we feel that decisions about the use of public monies should be appropriately responsive to public opinion, and that they express a society's aspirations and priorities in a way that private funding perhaps does not. Moreover, given the tightly inter-woven nature of privately – and publicly – funded research science, and the extent to which private research often 'piggybacks' on public research, through making use of techniques and results developed in publicly funded institutions and by employing researchers educated and trained in publicly funded institutions, a decision about the ethics of public funding may also have substantial implications for the future of *any* research into human cloning.

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