

# Therapeutic Cloning and Reproductive Liberty

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WORKING PAPER ONLY

A revised version of this paper appeared as:

Sparrow, R. 2009. Therapeutic Cloning and Reproductive Liberty. *The Journal of Medicine and Philosophy* 34(2): 102-18

Please cite that version.

## **ABSTRACT:**

Concern for “reproductive liberty” suggests that decisions about embryos should normally be made by the persons who would be the genetic parents of the child that would be brought into existence if the embryo were brought to term. Therapeutic cloning would involve creating and destroying an embryo which, if brought to term, would be the offspring of the genetic parents of the person undergoing therapy. I argue that central arguments in debates about parenthood and genetics therefore suggest that therapeutic cloning would be *prima facie* unethical unless it occurred with the consent of the parents of the person being cloned. Alternatively, if therapeutic cloning is thought to be legitimate, this undermines the case for some uses of reproductive cloning by implying that the genetic relation it establishes between clones and DNA donors does not carry the same moral weight as it does in cases of normal reproduction.

**KEYWORDS:** Therapeutic cloning; reproductive liberty; stem cells; parenthood; genetic relatedness

# Therapeutic Cloning and Reproductive Liberty

## Introduction

Ever since the birth of Dolly the sheep proved that it was possible to clone mammals by somatic cell nuclear transfer (SCNT), commentators have rushed to argue that SCNT cloning of human beings might offer possible benefits in two applications. Firstly, “reproductive cloning” might serve as a new technology of assisted reproduction which could allow couples suffering from certain forms of infertility to have children who are “genetically related” to them (Brock 1998, 146; Strong 2000, 186; Steinbock 2000, 80; Harris 1999, 148). Secondly, the creation of cloned embryos might play a central role in the development and application of clinical procedures which would allow the sourcing of tissue for rejection-free transplantation and other therapies. In particular, commentators have held out the possibility of “therapeutic cloning” serving as a source of embryonic stem cells, or other tissues, which might be used as the basis of various life-saving medical therapies.

Discussions of the ethics of SCNT human cloning typically distinguish between these two possible applications of cloning and discuss the ethical issues they each raise separately. In this paper I want to suggest that there is a hitherto almost entirely neglected tension between an important argument often made in support of reproductive cloning and the proposed use of cloned embryos in therapeutic cloning to produce embryonic stem cells.<sup>1</sup> The idea of reproductive liberty that developed in debates about abortion and assisted reproductive technologies, and which has been used to defend individuals’ right to access the technology of reproductive cloning, suggests that decisions about reproduction should be left up to individuals. Specifically, it suggests that decisions about the creation and destruction of embryos should normally be made by the persons who would be the genetic parents of the child that would be brought into existence if the embryo were brought to term. Moreover, arguments made in defence of the utility of reproductive cloning emphasise the importance of “genetic relatedness” in determining the relation between parent and child. Yet therapeutic cloning would involve creating and then destroying an embryo which, if brought to term, would be the genetic offspring of the genetic parents of the person undergoing the therapeutic procedure. Central arguments in debates about reproductive cloning therefore suggest that therapeutic cloning would be *prima facie* unethical unless it occurred with the consent of the genetic *parents* of the person being cloned. Alternatively, if therapeutic cloning does not

violate the reproductive liberty of the parents of the DNA donor, this undermines the case for at least some uses of reproductive cloning by implying that the genetic relation it establishes between parents and their cloned children does not carry the same moral weight as it does in cases of normal reproduction.

The different attitudes demonstrated towards the genetic relation between persons and cloned embryos in bioethical discussions of reproductive and therapeutic cloning suggest that significant philosophical work remains to be done analysing and clarifying our notion of genetic relatedness and also the relation between reproductive liberty and genetic parenthood.

## **Reproductive technologies and reproductive liberty**

The development of new reproductive technologies over the last four decades has generated a whole new set of issues in the area of biomedical ethics. Fortunately, it been accompanied by the development of a set of practices and principles used to resolve the ethical dilemmas these technologies raise. In some cases, particular principles have been adopted and used so widely as to effectively represent a consensus on how a set of issues should be resolved—or at least understood. One such principle is the idea of “reproductive liberty”.

The core idea of the notion of reproductive liberty is that decisions about reproduction should be left to those who are considering reproducing. As Ronald Dworkin (1993, 157-160) has argued, because reproduction poses some of the most difficult questions—and also involves some of the most intense experiences—in a normal human life, the liberal intuition that individuals should, as much as is possible, be free to resolve for themselves the central dilemmas of human existence implies that individuals should be allowed to settle questions around reproduction by themselves. The paradigmatic cases of the infringement of reproductive liberty are forcible sterilisation and the denial of access to abortion. It is wrong to prevent someone who wishes to from having a child, and it is wrong to force someone to have a child if they don't wish to. In particular, the idea of reproductive liberty insists that it is wrong for the state to make these decisions on behalf of individuals (Robertson 1994, 22-42; Brock 1994).

The idea of reproductive liberty has played an important part in thinking about the ethics of reproductive cloning in so far as it has been used to defend the “right” of persons to

reproduce by cloning if they so desire (Brock 1998, 145; Strong 2000, 186; Harris 1999; Murphy 2000). However, this is not, at least initially, the context for the application of this concept that I wish to focus upon here. In order to illustrate the tension I am concerned with in this paper, I want to begin by considering the ethics of In Vitro Fertilisation (IVF) programs, where the idea of reproductive liberty has also played an important role in shaping the practices used by IVF clinics in the course of IVF procedures and in helping to resolve the various moral dilemmas that may arise in their aftermath.

IVF procedures often involve the creation of multiple embryos, only some of which are implanted in any given cycle of treatment. It is therefore common for IVF laboratories to be left with a number of “surplus” frozen embryos at the end of the process. Questions about the fate of these embryos have been some of the most difficult dilemmas raised by the development of IVF. There have been a number of well-publicised cases where the two people whose gametes have been used in the creation of embryos have fallen out with each other and have disagreed about what should happen to them (See, for example, *Davis v. Davis* 842 S.W. 2d 588 [Tenn 1992]; *A.Z v. B.Z* 431 Mass. 150 [2000]; *J.B. v. M.B.* No. A-9-00, 2001 WL 909294 [N.J. Aug. 14, 2001]; *Kass v. Kass* 696 N.E. 2d 174 [N.Y. 1998]; *Kass v. Kass* 91 N.Y. 2d 554 [1998]; *Natalie Evans v. Amicus Healthcare Ltd and Others* W.L. 1174355 [2004]. For discussion, see Alghrani 2005; Forster 2000; Gardiner 2000; Harvard Law Review 2001; Robertson 1994, 113; Schuster et al. 2003). There have also been cases where one or both of the parties involved in the creation of embryos has died, leaving behind them frozen embryos the fate of which then needs to be decided (Most notoriously, the case of the “Rios Embryos”, which was publicised in Time Magazine in 1984. See Wallis 1994, and also Singer 1985. For discussion of the ethics of posthumous reproduction involving frozen embryos, see Petralia 2002; Robertson 1994b). Finally, because the storage and/or disposal of embryos may place burdens on the IVF clinic, and also because there is a sizeable proportion of the community that feels that the destruction of embryos is the destruction of human life and thus profoundly unethical, it has not been uncommon for third parties, including the clinics themselves, churches, and political interest groups, to announce an interest in the fate of embryos (Robertson 1994, 105; Schuster et al. 2003; Congregation for the Doctrine of the Faith 1987).

Given the nature of these disputes, it is not surprising that attempts to resolve them have typically involved at least some recourse to the idea of reproductive liberty. While it has

not been the only consideration, the presupposition of reproductive liberty has led to a strong presumption that these decisions should be made by the people who would be the genetic parents of the children who would be born if these embryos were to be implanted into a uterus and brought to term (Robertson 1994, 105-114). The intuitive force of this consideration in such circumstances is clear, as the possible outcomes of the decision being made include persons becoming parents against their wishes, or alternatively being prevented from becoming a parent by the decisions of others.

A necessary condition for the application of the notion of reproductive liberty is that we can identify the individuals whose reproductive liberty is at stake in a particular decision about reproduction. Until the possibility of SCNT cloning arose, the question of whose reproductive liberty was at stake in reproductive decisions was relatively straightforward.<sup>2</sup> In ordinary reproduction it is primarily the reproductive liberty of the mother of the child that is at stake (because of the mother's role in gestation), but also of the father (Robertson 1994, 34). In IVF, it is the reproductive liberty of the persons whose gametes are being used in the process (Robertson 1994, 27-29, 104-107; Robertson 1994b, 1046). However, as we shall see below, the question of just whose reproductive liberty is at issue in SCNT cloning is more complex.

## **Reproductive cloning**

Defenders of reproductive cloning have argued that a "right to clone" should also come under the aegis of reproductive liberty (Strong 2000, 208; Harris 1999; Murphy 2000). However, reproductive liberty is invoked as a response to critics of cloning rather than as a positive argument for the utility of reproductive cloning. The strongest argument in *favour* of research into human reproductive cloning is that SCNT cloning might be a useful technology of assisted reproduction in some circumstances. If neither partner in a couple is capable of producing viable gametes, SCNT cloning may allow them nevertheless to conceive a child that is "genetically related" to them (Brock 1998, 143; Strong 2000; Harris 1999).

There are in fact two types of scenario where cloning can produce a genetic relation between a couple and their offspring. The first is where the nuclear DNA used to generate a clone is taken from one or other of the couple themselves. The scenario which is most often discussed in the literature is where nuclear DNA from the prospective father is introduced into a

denucleated ovum donated by the prospective mother (Steinbock 2000, 80; Pence 1998, 99-100; Robertson 1998, 1379-1380, 1401).

In such cases, while the child is “genetically” related to one of its parents, this genetic relationship is not that which ordinarily holds between parent and child but is instead the relationship that more usually holds between homozygous twins. That is, in this scenario, cloning produces a genetic sibling rather than a genetic offspring. Despite this peculiarity, many authors have argued that prospective parents might prefer having this genetic relation over having no genetic relationship with “their” child and, furthermore, that this is sufficient reason to hold that that human reproductive cloning is worth pursuing as another technology of assisted reproduction (Strong 2000; Murphy 2000; Pence 1998, 108-12; Pence 2002, 68-69).

The second sort of circumstances in which SCNT cloning may assist prospective parents in conceiving a child that is genetically related to them is where the source of the nuclear DNA for the clone is a child that the couple have previously conceived as a result of the fusing of their gametes. For instance, a couple may clone one of their existing children, or a child of theirs that is deceased but whose DNA is available through stored blood or tissue, or an embryo they had previously conceived and frozen for storage (Robertson 1998, 1378-1379, 1381, 1393-1394). In such cases, cloning clearly produces a child genetically related to its parents in the same way as a child that they might—indeed, did—conceive naturally (Brock 1998, 148; Pence 2002, 59; Agar 2002, 148-9; Robertson 1998, 1423). It produces “genetic offspring”.

Given that alternative methods exist for becoming a parent of a child in either sort of circumstance, namely the use of donor gametes and/or adoption, any positive argument for reproductive cloning therefore rests on the putative moral weight of the genetic relation between parent and child.

I have argued elsewhere that the difference between the two types of genetic relation that cloning may establish opens up the possibility of conflicts between persons who are in each of these relations to a particular child. For instance, we can imagine a scenario wherein the parents of the DNA source for a cloned child sue the DNA donor for custody of the child on the grounds that it is *their* child. That is, the parents of the DNA donor might insist that

while the clone is genetically related to the donor as an identical twin *sibling* he/she is also related to them as being their *offspring*, which makes them *more* genetically related to the clone in the sense required to lend moral weight to the claim of being the parents of the child (Sparrow 2006; Kolers 2003).

I believe that, in order to resolve such conflict in a sensible fashion, supporters of reproductive cloning must grant a certain moral weight to the role played by intention in determining who should take custody of the child; doing so, however, calls into question the extent to which cloning is a superior reproductive technology to the alternatives of surrogacy or adoption, which also found the parental relation in a socially sanctioned act of will (Sparrow 2006).

However, what I wish to draw attention to here, for the moment, is the fact that the arguments for reproductive cloning on the basis of the importance of “genetic relatedness” typically valorise the genetic relationships established in *both* these types of cases. Moreover, there are, I think, grounds to suggest that enthusiasm for human cloning as a reproductive technology must favour reproduction according to the second of these scenarios, as it produces the paradigmatic genetic relationship which holds between parents and children. If this is true, then the positive case made for SCNT cloning as a reproductive technology in the literature should be read to imply that the genetic parents of a child produced by SCNT cloning are the parents of the DNA donor.

## **Therapeutic cloning and reproductive liberty**

What had not occurred to me in thinking about this issue previously was that the conflict between the moral claims of the DNA donor and the DNA donor’s parents noted above also arises in cases where the cloned embryo has been created for therapeutic rather than reproductive purposes.

“Therapeutic cloning” would most likely involve the creation of an embryo by SCNT cloning, for the purposes of extracting embryonic stem cells, or other tissues, to be used in various medical therapies (Gurdon and Colman 1999; Lanza, Cibelli, and West 1999; Okarma 2001, 3-13). As these cells would be genetically identical to the DNA donor’s own cells, the problem of tissue rejection which currently bedevils analogous therapies using cells

derived from other individuals would not arise. The potential medical benefits of such a technology are enormous. There is clearly a strong ethical case to be made for researching this technology and also for making it widely available if it eventuates (Lanza et al. 1999, 976; Harris 2003, 355; Holland, Lebacqz, and Zoloth 2001, xv-xxvii).

Most of the controversy around therapeutic cloning derives from the fact that it would involve the creation and destruction of human embryos which, according to some worldviews, is tantamount to the instrumentalisation and destruction of human life.<sup>3</sup> However, this is not the ethical issue which I wish to discuss here. What interests me here is not our obligations in relation to embryos *per se* but our moral obligations to other parties arising as a result of the manner of the creation of cloned embryos.

If we consider the creation and destruction of the cloned embryo in the light of the discussion of the preceding sections we can see that there is *another* ethical barrier to be overcome before it can go ahead. In cloning the DNA donor, one also brings into being an embryo which, if it came to term, would be the genetic offspring of the DNA donor's parents (Harris 1999; Kolers 2003; Robertson 1998, 1425). It may be that the creation of an embryo without any intention of bringing it to term does not violate anyone's reproductive liberty—although even this flies in the face of our intuitions regarding the creation of embryos using an individual's gametes without their permission.<sup>4</sup> However, by analogy with the example of embryos created in IVF programs, before *destroying* an embryo we should consult the persons who would be the genetic parents of the child if it were brought to term; in this case, that means the genetic parents of the DNA source.

It seems, then, that according to the standards developed to determine the fate of embryos created in IVF programs, therapeutic cloning is *prima facie* unethical unless it proceeds with the permission of the patient's parents. Our expectations concerning the creation and destruction of embryos in other circumstances directly conflict with the procedures necessary to accomplish therapeutic cloning.

## **A Thought Experiment**

The conflict I have identified can be dramatised by imagining a scenario where two genetically identical embryos were created— one in the course of reproductive cloning and



one in the course of therapeutic cloning—and questions about the fate of these embryos are then asked in each case. The scenario I am going to present is fanciful, but no more so than many others that philosophers construct to clarify and examine ethical issues.

Imagine a case wherein, in the very early years of their marriage, a couple, Margaret and Peter, gave birth to identical twins, who they name Albert and Brad. When Albert and Brad are in their teens, one of the twins (Albert) dies in an unfortunate accident, but not before several samples of his blood and tissue are taken. In the traumatic psychological aftermath of this accident, the parents become estranged from Brad who moves overseas and severs all contact with his family.

Some years later Margaret and Peter wish to conceive another child and discover that they have each become infertile. Neither of them is capable of producing viable gametes. They consider adoption, but are determined to have another child who is genetically related to them. Being familiar with recent discussion of human cloning, they decide to create a child using SCNT cloning. Using DNA sourced from the stored tissue of Albert and donor ova provided through a local IVF clinic, they create multiple cloned embryos genetically identical to Albert which they arrange to have cryogenically frozen. They then begin thawing these embryos and implanting them into Margaret's womb. After several attempts, they succeed in producing a child. They are overjoyed because they now have another child who stands in the appropriate relation to them to be their genetic offspring. Brad, of course, unbenownst to him, now has a much younger identical twin sibling. The IVF clinic that was assisting Margaret and Peter in their endeavour is also left with several stored embryos created by SCNT cloning.

Meanwhile, imagine that Brad has, unbenownst to his parents, returned to the town of his birth. As an adult, he suffers from an acquired degenerative disease which will ultimately be fatal. Fortunately, a treatment is at hand; the disease can be treated using cells derived from embryonic stem cells. In order to avoid problems with tissue rejection, the treatment involves therapeutic cloning. This cloning is performed by the same laboratory employed by Margaret and Peter and—coincidentally—uses ova from the same donor. The laboratory clones Brad, producing a number of embryos genetically identical to him—and also to his identical twin Albert—which they freeze in readiness to use and destroy them in this therapy.

Now imagine that the IVF laboratory involved in both of these procedures has stored the embryos to be used in Brad's therapeutic cloning in the same cryogenic freezer as the "surplus" embryos from Margaret and Peter's reproductive cloning procedure. Moreover, the lab technician who has stored Brad's embryos has been a trifle lax with the labelling of the stored embryos. As a result, there is some uncertainty about which embryos have been created in which procedure.

For practical purposes, this does not matter. If Margaret and Peter wish to have another child or if Brad needs a further source of embryonic stem cells, any of these embryos will suffice for either purpose. However the ethics of the use of these embryos is, on current understandings, quite different depending upon how they were created. If one of Brad's embryos is chosen then it can be destroyed in order to provide embryonic stem cells for his therapy, but should not be implanted into Margaret without his permission. If one of Margaret and Peter's embryos is chosen for destruction then this should only proceed with their consent. If it is destroyed without their consent, this is a profound violation of their reproductive liberty.

Yet these competing moral claims arise in relation to embryos which are genetically identical. The genetic relation that holds between Margaret and Peter and "their" embryo also holds between them and the embryos that Brad arranged to have produced. In effect, we have two competing sets of moral claims regarding the destiny of the "same" embryo. This situation is clearly unsatisfactory, especially in the context of debates about reproductive cloning which emphasise the importance of genetic relationships.

## **Possible theoretical resolutions?**

It must be granted that the arguments I have rehearsed here are unlikely to establish a serious all-things-considered case against therapeutic cloning. Given the medical potential of therapeutic cloning we might, for instance, simply choose to *override* the claims of the parents of embryos created in the course of the procedure. The good achieved by stem cell therapies involving therapeutic cloning may be large enough that we should be prepared to sacrifice individuals' interests in not becoming potential parents against their will.<sup>5</sup>

However, *if* we grant that the reproductive liberty of the parents of the DNA donor is at

stake then this strategy is morally fraught. Reproductive liberty is a “right” and part of the function of rights in moral deliberation is to prevent the interests of individuals being sacrificed for the benefit of some greater social good (Dworkin 1977; Thompson 1990). In this case, we would be forcing people to become genetic parents of an embryo against their will and then destroying the embryo which might have become their child.<sup>6</sup> We should be reluctant, then, to settle for a justification of therapeutic cloning which involves overriding the reproductive liberty of other parties until we have exhausted all other argumentative strategies.

There are two obvious ways in which one might seek to argue that the dilemma I have identified here does not arise. One draws attention to the role played by mitochondrial DNA in SCNT cloning. The other emphasises the importance of the intention(s) which led to the creation of the embryos.

### ***The role of mitochondrial DNA***

A complication in the argument I have been discussing thus far concerns the significance of the role played by the mitochondrial DNA transmitted from the ovum used to create the cloned embryo. In the hypothetical scenario set out above, the embryos created in the two different cloning procedure both contained the same set of mitochondrial DNA, as they were produced using ova from the same donor. However, in ordinary circumstances—if we can speak of such here—this usually will not be the case. Clones will have different mitochondrial DNA from the donor original: even the “genetically identical” clones that might be produced by therapeutic and reproductive cloning in the rare circumstances described above are likely to have different mitochondrial DNA because they will be produced using different ova. It might therefore be argued that the introduction of mitochondrial DNA in the course of therapeutic cloning distinguishes the embryo produced from the offspring of the DNA donor’s parents, as it is no longer genetically identical to their offspring (i.e. the donor)—and thus (perhaps) diminishes their moral claim to be consulted about its destiny (Robertson 1998, 1423; Harris 1999, 148).

There are, however, three difficulties with this suggestion, all relating to the fact that mitochondrial DNA is also introduced in the course of reproductive cloning. While none of them is, perhaps, on its own a decisive objection to resolving the tension in this way,

together they do suggest that the proposed solution is not adequate to the task.

First, this argument places an emphasis on the role played by mitochondrial DNA in the constitution of embryos which is not evidenced elsewhere in the literature on reproductive cloning. Discussions of human cloning typically proceed on the assumption that the identity of the clone is fixed by its *nuclear* DNA, with the mitochondrial DNA making only a minor contribution (Robertson 1998, 1425).<sup>7</sup> Emphasising the importance of mitochondrial DNA in these particular circumstances therefore seems more than a little *ad hoc*.

Second, emphasising the moral significance of mitochondrial DNA would require granting moral claims to the donor of the denucleated ovum used in the procedure. This suggests that they should also be consulted about the fate of embryos created using their oocytes.<sup>8</sup> Yet discussions of SCNT cloning do not generally allow that the reproductive liberty of the donor of the denucleated ova used in the procedure is at stake. While it might be argued that the donor has signed their claims away when consenting to provide the ova for the procedure, I am aware of little discussion of the ethics of securing the consent of donors to void their claims of reproductive liberty, which suggests that these claims are not widely believed to be of significant moral weight.

Finally, if the introduction of mitochondrial DNA is enough to critically weaken the moral claims of the parents of the DNA donor to be the genetic parents of the embryo—and therefore the appropriate loci for decisions about its fate—then this substantially weakens the case for reproductive cloning. It implies that people who wish to become parents by reproductive cloning of a child that they have conceived previously will be similarly unable to succeed in establishing their claim by referring to a genetic relation. This attempt to dismiss the genetic claims of the parents of the DNA donor in order to facilitate therapeutic cloning therefore occurs at a significant cost to the argument for reproductive cloning in at least some circumstances.

### ***Parenthood and Intention***

Another way of resolving the tension I have identified would be to emphasise the importance of the intentions that have led to the creation of embryos. In the case of therapeutic cloning, while the parents of the DNA donor have the paradigmatic genetic relationship of

parenthood with the zygote, they do not have the normal intentional relationship that holds between parent and (potential) child. It might therefore be argued that what determines who should be consulted about the fate of an embryo in cases like the one set out above is the identity of the persons who formed the intention to create it. In therapeutic cloning I think it is plausible to argue that this is the person being treated, who gave permission for the embryo to be created when they consented to the treatment.

There is clearly something in this idea. The genetic parents of the DNA donor haven't done anything to become parents and as a result it is hard to see how their claims could trump those of the donor, who has brought the embryo into existence. The idea that the intention of the DNA donor should be granted more moral weight than the genetic relationship held by the donor's parents is also supported by one of the few restrictions on reproductive cloning that is widely agreed upon, which is that it would be a gross infringement of a person's rights to clone them without their consent (Kass 1997, 23; Robertson 1998, 1395, 1446). Thus something *like* an argument from reproductive liberty, held by the DNA donor, is already recognised in discussions around cloning and supports the claims of the DNA donor.

However, this emphasis on intention is at odds both with the idea of reproductive liberty itself, and with the importance placed on genetic relatedness in discussions of reproductive cloning.

In its ordinary usage "reproductive liberty" clearly includes the liberty to determine the fate of embryos that one did not intend to create. Many people become parents by accident and we do not typically feel that they have any less rights as parents, or that it is any less an infringement of their reproductive liberty if the state denies them access to abortion or forcibly terminates the pregnancy. It is hard to see, then, why the reproductive liberty of the genetic parents of the embryo should be discounted simply because they had not intended to create an embryo.

Moreover, settling the clash between the claims of the DNA source and the claims of their parents on the basis of intention downplays the significance of the genetic relationship between persons that is used to argue for the utility of reproductive cloning. If we deny that the genetic relationship the parents of the DNA donor would have with the child carries sufficient moral weight to allow them to veto the desire of the person who brought the

embryo into being, this will presumably weaken the argument that cloning establishes a morally significant parental relationship when used for reproductive purposes, at least in circumstances where a couple are seeking to become parents by cloning a child that they had previously conceived naturally.

On the other hand, it appears that insisting that the DNA donor is the proper *loci* for decisions about the fate of embryos in cases of therapeutic cloning strengthens the case for reproductive cloning where a person clones *themselves* in order to create a child which is “genetically related” to them. Yet, perversely, this result may itself involve a significant cost to the argument for reproductive cloning more generally.<sup>9</sup> As I observed at the outset of my discussion, the case for reproductive cloning rests on the moral importance we place on parents being able to nurture a child who is “genetically related” to them. However, if it turns out that the strongest case for cloning involves the creation of a genetic twin rather than a genetic offspring then enthusiasts for cloning can no longer in good faith draw on our intuitions about the significance of the genetic relation between parent and child in ordinary circumstances in order to make the case for the utility of reproductive cloning. Defenders of reproductive cloning would instead have to argue that we should grant moral weight to individuals’ desire to raise their *twins*. Perhaps this is indeed a desire we should respect and seek to satisfy, but we can hardly point to the lengths people go to in order to have *children*, or the significance that we place on the *parental* bond, as evidence for this being the case.

This is not to say that defenders of reproductive cloning could not hold that some combination of genetics and intention establishes a morally significant relationship between cloners and clones, but it does imply, I think, that claims about genetic relatedness cannot do as much work as has previously been thought and also that they take second place to claims about the existence and moral weight of appropriate intentions in those who are “genetically related” to the child (Silver and Silver 1998; Kolers 2003). This in turn suggests that claims about intention are actually what is doing the real work in arguments for new applications of reproductive technology and consequently weakens the claim that these technologies are uniquely capable of serving the purpose of allowing people to become parents.

## Conclusion

To date, discussion of the morality of therapeutic cloning has focused on the ethics

of creating and destroying embryos for the purposes of medical procedure. It has neglected the ethics of the destruction of the particular embryos that would be created and destroyed in therapeutic cloning, which would have a genetic relation both to the DNA donor and the donor's genetic parents. As these embryos would be the genetic offspring of the parents of the donor, the idea of reproductive liberty used elsewhere in discussions of the ethics of assisted reproduction, including reproductive cloning, implies that it would not be ethical to destroy such embryos without the permission of the genetic parents of the patient being treated. This in turn implies that cell-based therapies involving therapeutic cloning will not be ethical without the permission of the genetic parents of the person who wishes to undergo the treatment. It may be possible to avoid this troubling conclusion by emphasising the moral weight of the intentions which led to the creation of the embryo but only at a cost to the case for *reproductive* cloning.

However, the main lesson I would draw from my discussion here is that there remains further work to do clarifying our concepts of parenthood, genetic relatedness, and reproductive liberty, and the relation which holds between them. New reproductive technologies increasingly have detached these concepts from their original conditions of application (Silver and Silver 1998). SCNT cloning is especially destructive in this regard because by facilitating the transmission of genetic information via somatic rather than germ cells, it makes possible reproduction without conception. SCNT cloning therefore makes it possible to create a child (or an embryo) without needing to utilise the gametes of those parties who would ordinarily be considered to be the genetic parents of the child (or embryo) that results. It divorces the intention which leads to the creation of a child from the genetic relation which ordinarily exists between parent and offspring. Yet the invention of the technology has led to an increased emphasis on the importance of "genetic relatedness" in both the popular and bioethical literature. Cloning therefore problematises at the same time as it emphasises the importance of genetic parenthood (Robertson 1998, 1373).

Given these developments it is, I think, currently unclear whether the concept of reproductive liberty is hostage in its application in cases of cloning to a prior determination of who the parents of a (potential) child would be. There is an expanding philosophical literature surrounding the nature and definition of the parental relation, in which the competing claims of intention, causation, gestation, genetics, and social relations are contrasted and tested against each other.<sup>10</sup> My discussion of therapeutic cloning provides some reason to

believe that the question of whose reproductive liberty is at stake in decisions about cloning—and perhaps other reproductive technologies—should be settled by the same discussion.

However, there are also strong philosophical and pragmatic reasons to resist this conclusion. A number of the contexts in which we hope that the notion of reproductive liberty will allow us to resolve moral dilemmas are circumstances where parties are contesting who the parents of a (potential) child would be. It seems to me that an important function that we desire of the notion of reproductive liberty is actually to place *limits* on who can become a parent using particular gametes or—in the context of SCNT cloning—of a child with a particular genetics. That is, the concept is supposed to defend individuals from other parties using their gametes or genetic material without their consent. In this context, the genetic relation between parents and their offspring has an extra moral weight, compared to that it possesses in more general discussions of parenthood. This line of thinking suggests that—contra the line of argument set out above—the concept of reproductive liberty is in some sense prior to, or at least relatively independent of, a final determination of who the parents of a child are.

Our ability to settle the question of the relation between parenthood and reproductive liberty is hampered by the fact that the possibility of SCNT cloning has also destabilised our concepts of “genetic relatedness”. The idea that a clone is a “genetic copy” of the DNA source encourages us to adopt an “informational” account of genetic relatedness which measures relatedness in terms of numbers of genes shared, as opposed to the traditional causal/historical account, whereby the degree to which individuals are genetically related depends upon their positions in a family tree. An “informational” account suggests that we are more related to our clones (or indeed our identical twins) than we are to our offspring, with whom we share only 50% of “our” genes.<sup>11</sup> Yet we do not typically hold that the relationship we have with our identical twins makes us their parents. Indeed, it is not clear that the informational account succeeds in capturing the relationships between individuals that matter to us in ordinary reproduction (Kolers 2003). Nevertheless, the advent of cloning along with genetic “mapping” projects such as the human genome project has clearly had a substantial impact on how we think about the relationship between different genomes. As a result, even the idea of genetic relatedness is less straightforward than was previously thought.

How we should conceptualise the relationship between parenthood, genetic relatedness, and reproductive liberty in the face of these complexities therefore remains unclear. My



suspicion is that a closer investigation of genetic relatedness and reproductive liberty will show that, as is the case with parenthood, the only way to render these ideas philosophically precise will be to make some tough choices among competing definitions, with the consequence that the precicified concepts will not do all the work that we currently require of them. In particular, I suspect that—as I have argued here—they will not serve us in advancing the case for both reproductive and therapeutic cloning. However, working through the detail of this conceptual clarification and investigating its full implications are tasks which remain to be addressed by further research.

## **Acknowledgements**

I would like to thank Justin Oakley, Debra Dudek, Neil Levy, and Mianna Lotz for comments and discussion which have assisted with the development of this paper. I would also like to thank Emilio Mora and Nicole Kouros for their assistance in preparing the paper for publication.

## NOTES

<sup>1</sup> The possibility of conflicts between the interests of persons in reproducing via cloning and the interests of their genetic parents in avoiding reproduction is raised in (Robertson 1998; Silver and Silver 1998; Kolers 2003) However, only Robertson mentions the possibility that this conflict could arise in cases where embryos are produced for purposes other than reproduction and he does so only in passing.

<sup>2</sup> I say *relatively* straightforward advisably, as some previous reproductive technologies have raised dilemmas in this area. In particular, surrogate motherhood may lead to conflicts between the gestational mother, the genetic parents of the child and (perhaps) the commissioning parents concerning the fate of either children or embryos. In such a case it appears that the gestational mother, at least, can make reference to her reproductive liberty in asserting her moral claims, as well as the genetic parents and *perhaps* the commissioning parents. It is controversial as to whether and how these competing claims might be resolved on the basis of reproductive liberty alone (for a concerted attempt to untangle these competing claims, see Robertson 1994). What is clear,

however, is the identity of those persons whose reproductive liberty is at stake by virtue of their genetic relationship with the child. My thanks to Neil Levy for drawing my attention to this complication.

<sup>3</sup> For a useful survey of views on this topic, see National Bioethics Advisory Commission 1998, 165-80.

<sup>4</sup> At issue here is whether the “right not to reproduce”, which is an important part of reproductive liberty, includes the right not to become the genetic “parent” of an embryo, or only the right not to become the parent of a child. Note, however, that as soon as an embryo is brought into existence it seems that its “genetic parents” stand in a special relationship to it, in relation to decisions about its future fate.

<sup>5</sup> We would also, perhaps, be sacrificing society’s interest in being able to use the idea of genetic parenthood as a means of settling disputes about the fate of embryos. I will return to this matter in the Conclusion below.

<sup>6</sup> Note that the fact that the parents of the DNA donor are genetic “parents” only of an embryo rather than a child is less significant than first appears here. As the debates around embryos created in IVF programs demonstrate, being the genetic parent of an embryo is sufficient to give one strong right to be consulted about its fate. One reason for this, of course, is that in the opinions of some people every embryo is a “potential child” with the same status as an actual child. Even if one does not believe this, one can still believe that we should respect the opinions of those who do, at least in relation to their “own” embryos.

<sup>7</sup> It is true that some discussions of reproductive cloning emphasise the role played by mitochondrial DNA to explain how an embryo created by inserting the nuclear DNA of its “father” into a denucleated ovum provided by its “mother” would be related to both members of the couple (see, for instance Agar 2002, 141; Kahn 1997, 119). However, even these discussions concede that the genetic relation between donor and clone is more properly captured by describing the clone as the (nearly) identical twin of the DNA donor rather than as their offspring.

<sup>8</sup> Interestingly, because mitochondrial DNA is transmitted along the matrilineal line with very little variation, the genetic relationship between the mDNA donor and the embryo also holds between the embryo and the maternal ancestors of the ovum donor. This suggests that if parental claims are granted to the ovum donor on the basis of the genetic relationship they have with the embryo these claims should also be granted to the mother and grandmother of the ovum donor, if they are still living. My thanks to Neil Levy for this observation.

<sup>9</sup> Another strange consequence of this way of understanding the issues is that those who are seeking to treat themselves by therapeutic cloning are doing so by creating an embryo that in other circumstances would be acknowledged to be their child. While there are many more morally dubious reasons to conceive a child than to save one's own life or health, those who are inclined towards virtue ethical approaches to bioethical dilemmas might feel that conceiving *one's own child* in order to save one's own life is *more* problematic than the alternative way of understanding therapeutic cloning as creating a potential "saviour sibling".

<sup>10</sup> Bayne (2003) offers a comprehensive guide to this literature in footnote 2.

<sup>11</sup> Of course the genetic similarity between parents and offspring is much *more* than 50%, as all human beings share 99.9% of their genetic makeup with all other human beings, as well as a substantial number with primates such as chimpanzees. In the light of this comparative genetic homogeneity it is, I think, incumbent on those who do wish to describe relatedness in terms of "shared genes" to explain what we *do* care about our relation to our genetic offspring. My characterisation of this relation in terms of sharing 50% of "our" genes is intended as shorthand for a yet-to-be-provided more complete description in terms of sharing (on average) 50% of the genes that varied between the parents.

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