

Cloning and Genetic Parenthood

AVERY KOLERS

This paper explores the implications of human reproductive cloning for our notions of parenthood. Cloning comes in numerous varieties, depending on (among other things) the kind of cell to be cloned, the age of the source at the time the clone is created, the intended social relationship, if any, between source and clone, and whether the clone is to be one of one, or one of many, genetically identical individuals alive at a time. The moral and legal character of an act of cloning may, moreover, differ in light of these distinctions.¹ Surprisingly, however, reproductive cloning in all its variety seems to undermine the view of parenthood that is most popular among proponents of reproductive technology in the bioethics literature. This view, *geneticism*, has much to recommend it. I will show, however, that as commonly understood, geneticism is incompatible with the reproductive view of cloning. I then canvass alternative accounts of parenthood—namely, conventionalism, gestationalism, and intentionalism—but none succeeds in explaining reproductive cloning. I thus return to a reconstructed version of geneticism. I argue that the problem for geneticism rests not with the notion of genetic parenthood as such but with a particular, flawed, understanding of it, which I call *informational geneticism*. Informational geneticism should be rejected in favor of a “physicalistic” version of geneticism, which treats genes as particular objects, not abstract types, and takes seriously the essentially embodied character of reproduction. For these reasons, physicalistic geneticism survives the challenge represented by reproductive cloning. Additionally, physicalistic geneticism accommodates attractive aspects of competing views of parenthood, meeting some powerful objections in the process.

Geneticism and Reproductive Cloning

The reproductive view of cloning says simply that cloning oneself can be a form of reproduction.² John Robertson dubs cloning “reproduction *tout court*”: it is “truly reproductive, rather than merely replicative” but is “the minimal and least protected form of reproduction.”³ It is not uncommon for proponents of reproductive cloning to observe that cloning seems to be missing something: Lisa Newton, for instance, calls cloning “replication” or a “sort of recycling”

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(p. 179).⁴ Missing, of course, are meiosis, fertilization, and genetic reshuffling. If cloning is reproductive, it is a form of *asexual* reproduction.

The plausibility of the reproductive view of cloning thus depends in part on whether we understand *Homo sapiens* as *essentially* a sexually reproducing species. It is, however, hard to see the attraction of such a position. Biologists may have methodological preferences for keeping those species that reproduce sexually distinct from those that reproduce asexually—and we may, too, want to maintain interbreeding as a criterion of species membership—but when we foresee human cloning we foresee a *human* being created in the absence of sexual reproduction, and surely this brute fact would constitute sufficient evidence that *Homo sapiens* is not essentially a sexually reproducing species. Thus for the purposes of this article, I shall assume that we want to endorse the reproductive view of cloning. It may be that this view should ultimately be rejected or revised, but in light of its initial plausibility and wide acceptance I shall canvass some of its implications for our notion of parenthood.

The most popular view of parenthood—particularly among those who endorse human cloning and other reproductive technologies—is geneticism.⁵ The genetic view of parenthood holds that P is the parent of anyone who is directly derived from P's genes. *Derivation* is crucial to genetic parenthood; in sexually reproducing species, offspring share 50% of each parent's genetic code, but mere sharing cannot distinguish parent from child. Derivation is fundamentally a *causal* relationship; the offspring is as it is *because* of its relationship to its parents, whereas the inverse is not true. Causal relationships are, then, *asymmetric* or *directional*, thereby distinguishing parents from children. Derivation may, moreover, be iterated, as between grandparents and grandchildren, and thus genetic parenthood is *direct* derivation; that is, derivation that necessitates only one halving of the parental genome. Each iteration of this process creates a further generation; thus geneticism—unlike competing views, as I shall show—easily explains the nature of grandparenthood, great-grandparenthood, and so forth.

Normally, genetic derivation involves meiotic cell division, reshuffling, and fertilization. But as understood in most geneticist literature, these physical processes are merely contingent matters of fact; as it happens, most humans now reproduce physically, but this need not always be so. Like vinyl records, meiosis and other trappings of physical reproduction are clunky analog mechanisms subject to replacement by reliable digital technologies when these are cheaply available.

An account of the philosophical basis of parenthood may appear abstract, but its context is provided by the concrete moral and legal claims that would-be parents make. For instance, John Robertson's geneticism is at the core of his defenses of "surrogate motherhood" and a qualified reproductive right to clone oneself.⁶ The idea is that a person can have an interest in passing on his or her genes, quite apart from that person's interest in having a family; and the first should be legally protected *independently* of the second. Moreover, since *Griswold v. Connecticut*, the "privacy" paradigm has been the main framework for explicating reproductive liberty in American law, and this paradigm is straightforwardly applicable to genetic information and derivation. Indeed, over the past decades, judges have effectively reconceived legal fatherhood in line with geneticist criteria.⁷ For better or worse, contemporary western societies and popular media seem in the throes of what R. C. Lewontin calls "genomania."⁸

Given its popularity among proponents of reproductive technology, we might presume that geneticism would apply straightforwardly to cases of reproductive cloning.⁹ Surprisingly, however, the implications of cloning for geneticism are much more disorienting. For on geneticism, cloning reproduces not the cell donor but her own parents.

As I noted, genetic parenthood demands (asymmetric) *derivation*, not mere (symmetric) *relatedness*. Despite the reproductive freedom arguments for cloning, then, a geneticist approach seems forced to regard cloning not (only) as a way of *expanding* or *exercising* reproductive rights but (at least significantly) as a way of *violating* them. Imagine that a woman, Tarzana, clones herself, creating a new person, Jane. According to geneticism, when Tarzana's parents hear that she has cloned herself, they will learn that they have a new daughter. Jane is Tarzana's later-born twin sister. But reproductive freedom, the freedom to decide the number and spacing of one's children, entails the right *not* to reproduce.¹⁰ Suppose that Tarzana's parents did not want more children. Unfortunately, it is too late; by cloning herself, Tarzana has given her parents another daughter against their wishes. As R. C. Lewontin writes,

A child by cloning has a full double set of chromosomes like anyone else, half of which were derived from a mother and half from a father. It happens that these chromosomes were passed through another individual, the cloning donor, on their way to the child. That donor is certainly not the child's "parent" in any biological sense, but simply an earlier offspring of the original parents. Of course this sibling may *claim* parenthood over its delayed twin, but it is not obvious what juridical or ethical principle would impel a court or anyone else to recognize this claim.¹¹

Geneticism thus appears to be incompatible with reproductive cloning; or more precisely, geneticism could regard cloning as reproductive; but contrary to the assumption of many geneticists, that view could not regard the cloned person as the parent of her clone. Geneticism turns clones from offspring into siblings. We thus face a dilemma: drop the reproductive view of cloning to hold onto geneticism; or drop geneticism for the reproductive view of cloning. As currently conceived, the two views are incompatible.

Alternative Accounts of Parenthood

Reproductive cloning thus undermines geneticism about the nature of parenthood. In this section, I canvass alternative views of parenthood—conventionalism, gestationalism, and intentionalism—to see whether they are more plausible. I shall argue that none is.

Lee Silver and Susan Silver defend conventionalism about parenthood. They attack geneticism by describing cases of reproduction involving identical twins.¹² P and Q are the genetic parents of F only if F shares 23 chromosomes with each.¹³ This seems like an obvious generalization. But suppose, with Silver and Silver, that P has an identical twin, T. In this event, any gamete of P's could equally well have been a gamete of T's, and as a result, F shares 23 chromosomes with T. The obvious generalization suddenly gives F a third genetic parent.

Geneticists might try to avoid this odd result by appeal to actual physical derivation; to say that whatever the genetic makeup of P and T, what matters is whose body made the particular gamete that participated in creating F. Silver and Silver imagine a case where P cannot carry a child, but T is willing to do so for her. P must decide between (1) IVF using her own ova, followed by implantation in T's uterus; and (2) artificial insemination of T, using T's ova (which are genetically indistinguishable from P's). Granting the initial inclination to appeal to physical derivation, Silver and Silver suppose that P desires to "use her own egg so that her child receives the particular DNA molecules that she produced in her own body."¹⁴

Silver and Silver dismiss this preference as irrational on two grounds. First, they suggest that it is mere chance which ova are in the body of P, and which in the body of T: "the only unique contribution made by [T] is that of storing the egg for some twenty-five years before graciously handing it over for use by her sister."¹⁵ Second, they hold that physical derivation is irrelevant, because "only a tiny fraction of original DNA molecules from the mother survive in a few scattered cells among the 100,000,000,000,000 present in the child's body."¹⁶ Silver and Silver instead bite the bullet and say that P and T are *both* the genetic parents, or "gene-moms," of F. F will, indeed, have three genetic parents, *no matter which* option P chooses. And given that artificial insemination is easier, cheaper, and safer than IVF, they counsel option 2, which uses T's ova.

Silver and Silver hold that such puzzle cases imply a stark conventionalism about parenthood: "In the end, whether a child is one's own or not is determined simply by the way a parent feels, no matter where or how gamete differentiation or fetal development took place."¹⁷ They add, "In Western society, children, brothers, sisters, parents, grandparents, and all other family relations are defined by social circumstances, not genes."¹⁸

But Silver and Silver greatly overstate the degree of conventionalism in popular understandings of parenthood. Feeling as though a child is "one's own" is neither necessary nor sufficient for that child actually to be "one's own." Without being too melodramatic, we might imagine a jealous husband who is suspicious of the parentage of his wife's baby and consequently wonders whether the child is "his own." Suppose, it is: genetically, legally, and socially, this child is his own, though he believes otherwise. His jealousy breeds misfortune, but not contradiction. Feeling as though a child were one's own is not necessary for its being so. Nor is it sufficient: imagine a trusting husband whose child is *not* genetically his own, though he believes it is, and feels a close connection to it. Again, there is no contradiction here. The term "one's own child" undeniably has a genetic connotation, and there is a familiar use of the term on which "one's own" simply means "*genetically* one's own." To deny this genetic component is to be quite out of step with "Western society," which if anything *overstates* the importance of genetic derivation.

Moreover, Silver and Silver wrongly hold that whether Tarzana and Jane turn out to be sisters or mother and daughter depends entirely on which part Tarzana plays:

the social role played by a genetic progenitor can be that of either parent or a sibling depending on the age of the progenitor and the circumstances under which cloning occurred. (. . . If the older clone acts as a social mother, then the younger clone should have all rights

of inheritance from the older, as any naturally conceived child would. If the two clones are raised socially together as siblings, then the law should treat them as such as well.)¹⁹

But this simple formula is no match for the permutations of familial organization. For suppose that, when Tarzana is 10 years old, her parents clone her and rear Jane as her sister. Sadly, five years later, their parents die, whereupon Tarzana takes on the role of Jane's parent. On Silver and Silver's formula, Jane will have been Tarzana's sister for five years, her daughter the rest of the time.²⁰ But there is a clear sense in which a person can rear her siblings. There is, to be sure, a large degree of convention in any culture's kinship practices, but Silver and Silver greatly overstate it.

Another alternative to geneticism is gestationalism, on which P is the parent of F if and only if P gestated F. Consider what gestationalism would say about our cloned protagonist Tarzana. Simply put, Jane is Tarzana's daughter if Tarzana gestated Jane, and not otherwise.²¹ As to the twins case, the gestationalist holds that P is stuck: no matter which option P chooses, T, who gestates and bears the child, will be F's natural mother. Gestationalism has the virtue of attending to the person who actually gives birth, whereas geneticism was inclined to ignore this person in Tarzana's case, or treat her as a mere gamete storage unit in the twins case. Moreover, gestationalism provides straightforward answers on each case. What gestationalism gains in precision, however, it arguably loses in plausibility. First, we might have thought that the essential feature of the relationship between Tarzana and Jane was that they were clones. Gestationalism ignores this. The gestationalist answer on the twins case is similarly unconvincing. Like geneticism and conventionalism, gestationalism ignores the difference between IVF and artificial insemination as a basis of the relationship between P or T and F. Gestationalism does not pay due respect to P's view that, through IVF, she might have *her own* child.

Finally, consider intentionalism, which holds that P is the parent of any person whose existence P orchestrated by intending and carrying out—or having others carry out—the required actions: that is, F exists because P intended to create and rear a child.²² If Tarzana intentionally created Jane in order to have and rear a child at a level of development within the normal range for her society, then Tarzana is Jane's intentional mother. On the other hand, if Tarzana agreed to be cloned so that a lab could do research on Jane, or if Tarzana had carried Jane to term with the intention of surrendering custody under the auspices of a surrogacy contract, Tarzana would not be Jane's parent. She would be, at most, a mere "genetic progenitor." As to the twins case, intentionalism says that no matter which option P chooses, F will be her baby, given that it is her intention to beget and rear that causes F to come into existence. Intentionalism is, however, unattractive. Where gestationalism ignored the signal feature of the relationship between Tarzana and Jane—namely, that Jane is Tarzana's clone—intentionalism ignores the biological features of *all* biological relationships: between Tarzana and Jane; between P, T, and F; and between any parents and any children. Kinship relationships do, obviously, entail a variety of intentional states and conventions, but individuals do not legislate such relationships simply by intending them.²³

The inadequacy of gestationalism, intentionalism, and conventionalism leaves us with no plausible account of parenthood that makes sense of the reproduc-

tive view of cloning. I want to argue, however, that reconsidering genetic parenthood—understanding it as essentially a physical process—can solve this problem.

Physicalistic Geneticism

I shall argue that what is wrong with geneticism as previously discussed is not due to geneticism as such, but to a specific version of it—informational geneticism (IG). In contrast, a superior version—physicalistic geneticism (PG)—retains its plausibility in the face of reproductive cloning.

As a version of geneticism, IG holds that in the first instance P might be F's parent because F is directly genetically derived from P. But IG takes a particular view of genetic derivation. On IG, "gene" is a functional- or informational-kind term, and only accidentally a name for a physical object. On IG, the only criterion of genetic parenthood is that half the child's genetic information is inherited from the parent. This information could take any number of forms—it could be written on a piece of paper, saved on a hard drive, encoded on ticker tape, or whatever.²⁴ Its connection to the body of the person whose genetic structure it represents is contingent: it will tend to give rise to some traits apparent in that person's phenotype, but it could equally have done that if it had been stored on a hard drive for 300 years and then unzipped by some sci-fi procedure to create an organism.

In contrast, PG refuses to consider the genetic information outside its embodied context: organized into chromosomes, on strands of DNA, built from environmental raw materials, subject to expression or mutation under circumstances C, and so forth. On IG, to be a gene is to be information, and thus to be a genetic parent is to be an earlier node in the transmission of this information. On PG, although it carries some particular information that may be essential to the identity of any given gene, a gene is nonetheless also essentially concrete. On this account, even if a DNA fingerprint or "any imaginable test" would find no difference between the ova of P and those of T, it is a mistake to downplay "the only unique contribution" made by T—namely, "storing" a gamete. As Silver and Silver themselves note in passing, to store a gamete is to provide it with "raw materials that are recovered from the food that the mother, and then the child, consumes"²⁵—as well as the oxygen they breathe, the pollution they inhale, the radiation they are exposed to, the reproductive-system glitches to which they are susceptible, and so on. Physicalistic geneticism—though still, as a form of geneticism, emphasizing the informational "blueprint"—is attuned to the necessarily physical character of human beings and their reproductive processes. Genetic parenthood, that is, involves *physical* derivation of the genetic structure of F from that of each parent. In effect, the problem with IG is that it mistakes a map for a territory.

Another way to articulate the problem with IG is in terms of types and tokens. When we state that F is derived from P's genes, we may understand "gene" in either of two senses. In the first place, we may mean P's particular DNA molecules, the concrete objects stored in the nuclei of P's cells. Alternatively, we may mean a *type* of DNA molecule, where the type in question is individuated in terms of the information it carries. The former, physicalistic, understanding characterizes PG; the latter, informational, understanding characterizes IG. Both ways of characterizing genes may be useful in different

contexts; what is important is that only the concrete understanding is appropriate for parenthood.

Let us return to Silver and Silver's claim that it would be irrational for P to prefer using (option 1) her own ova over (option 2) T's ova. The only reason Silver and Silver think that options 1 and 2 are the same is that they presuppose IG. It is only on this view that T and P are *both* "gene-moms" of F, no matter which option is chosen, or indeed even if P had borne a child unassisted.

Moreover, recall Silver and Silver's two criticisms of P's desire to use her own ova, instead of T's, to have a child. First, PG straightforwardly explains why it matters that T "stored" a gamete for 25 years: the conditions of "storage" are essential to its identity. Second, PG legitimates P's desire that her own gamete be used even though "the original DNA molecules from the mother survive in a few scattered cells among the 100,000,000,000,000 present in the child's body."²⁶ For the question is not about the molecules themselves but about the physicality of reproductive processes or, put differently, the *ecology* of reproduction. Although the original DNA molecules are all but gone, every molecule composing a newborn baby—DNA included—is made of stuff that the gestating mother consumed. Physical processes, including the replication of genetic information, occur in some place or other, and the environment in which they take place affects their character. These processes then ramify through multiplication as well as continued interaction with their environment. Environments partly determine which genes are expressed, and how.

Recall, further, Tarzana's parents' complaint that by cloning herself Tarzana has wrongly given them another child, hence violating their right not to have more children. IG must rule out cloning in the absence of consent from Tarzana's parents. For a DNA fingerprint would show that Jane is Tarzana's twin, and Tarzana's parents are Jane's parents.

PG might hold that what matters in this case is whether Tarzana independently determines the conditions under which her cells are "stored" before being used to create a clone. If the cells are taken before Tarzana has been able to exercise any real agency regarding her life, then PG agrees with IG that Tarzana is Jane's older twin sister. If, however, Tarzana clones herself using cells for which she is able to exercise responsibility—for instance, by wearing sunscreen, or smoking—then arguably Tarzana is the mother. To be sure, this solution also injects an element of intention and convention into geneticism; and so it should, for genes are physical entities subject to similar kinds of use as other aspects of our bodies. Convention is part of parenthood because in many cases there is no uniquely correct, "natural" way to characterize relationships. This is especially likely at the margins, when new kinds of family are being created through either social or biological experimentation. When confronted by these possibilities, IG seemed to yield to Silver and Silver's extreme conventionalism, on which kin relationships were established simply by the feelings of certain of their participants. PG avoids this extreme.

Ironically, then, in being sensitive to the noninformational aspects of genetic processes, PG builds in enough convention to settle the "who are the parents" problem nonarbitrarily but not so much as to turn the whole affair into a convention. The less gung-ho version of geneticism is the only version that withstands scrutiny in light of reproductive technology. Moreover, in avoiding the informational approach, PG resists and indeed reverses the "mistaken synecdoche that substitutes 'gene' for 'person'."²⁷ Not only gestation but

genetic derivation is an embodied physical process. PG respects the embodiment of genetic information in a way that IG does not.

Conclusion

What happens to our concept of parenthood when we apply it to reproductive cloning? I have argued that we are pushed toward a more nuanced account of genetic parenthood than we otherwise had. To say this is not to defend genetic derivation as a necessary condition of parenthood but to make this aspect of reproduction more defensible as part of a mature notion of parenthood in light of reproductive biotechnology.

In my view, no account of parenthood could be adequate unless it were pluralistic, giving at least equal weight to gestation.²⁸ Nonetheless, genetic derivation captures an important aspect of parenthood—moral, legal, and sociological—and we should not give this up easily. Elizabeth Anderson argues that grounding parenthood in genetic derivation guarantees children “an assured place in the world” independent of the arbitrary desires of those who create them and embeds children in a nexus of family “associations and obligations” that would not automatically follow from other accounts of parenthood.²⁹ This pinpoints precisely the advantage that geneticism has over conventionalism and intentionalism; but it also pinpoints precisely the advantage that PG has over IG. Obviously, more would need to be said to defend geneticism fully, but Anderson’s claims suggest that we should not give it up if we do not need to.

Similarly, I have not here defended cloning. Whether cloning should be permitted depends in part on moral questions involving competing privacy rights, harm and wrongful life, and the relative importance of the interest in having a genetically related child, among others. But these questions, as typically framed, *presuppose* the reproductive view of cloning and so can be fully addressed only after the implications of the reproductive view are fleshed out and we have a better sense of what it means to be a parent in an age of cloning. It may be that reproductive cloning ought ultimately to be rejected. It would nonetheless remain true that genetic parenthood is a physical process infected—like all (quasi-)voluntary physical processes—with elements of intention and convention.

Notes

1. Roberts M. *Child versus Childmaker*. Lanham, Md.: Rowman & Littlefield; 2000:chap. 5
2. For example, see: McGee G. *The Perfect Baby*. Lanham, Md.: Rowman & Littlefield; 2000:147. Strong C. Cloning and infertility. *Cambridge Quarterly of Healthcare Ethics* 1998;7:279–93. Murphy TF. Entitlement to cloning: response to Strong. *Cambridge Quarterly of Healthcare Ethics* 1999;8:364–8. Fitzgerald KT. Human cloning: analysis and evaluation. *Cambridge Quarterly of Healthcare Ethics* 1998;7:218–22. Robertson JT. Liberty, identity, and human cloning. *Texas Law Review* 1998;76:1371. Silver LM, Silver SR. Confused heritage and the absurdity of genetic ownership. *Harvard Journal of Law and Technology* 1998;11:593–618. Also see note 1, Roberts 1998:chap. 5.
3. Robertson J. Cloning as a reproductive right. In: McGee G, ed. *The Human Cloning Debate*. Berkeley: Berkeley Hills Books, 2000:52.
4. Newton LM. Mom, dad, clone. *Cambridge Quarterly of Healthcare Ethics* 1998;7:176–86.
5. Robertson J. Surrogate motherhood: not so novel after all. In: Pence GE, ed. *Classic Works in Biomedical Ethics*. New York: McGraw-Hill; 1998:138–50. Also see note 2, Roberts 2000:206–7.

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- Also see: Hall B. The origin of parental rights. *Public Affairs Quarterly* 1999;13:73–82. One geneticist who rejects most reproductive technologies is: Kimmel H. The case against surrogate parenting. In: Pence GE, ed. *Classic Works in Biomedical Ethics*. New York: McGraw-Hill; 1998:128. Kimmel opposes most forms of reproductive biotechnology. In this part of the article I refer simply to “geneticism,” though I am discussing what I will eventually call “informational geneticism.” For an evaluation of geneticism as a standalone theory of parenthood (not making reference to the informational/physicalistic distinction), see: Kolers A, Bayne T. ‘Are you my mommy?’ on the genetic basis of parenthood. *Journal of Applied Philosophy* 2001;18:273–85.
6. See note 5, Robertson 1998. Also see note 3, Robertson 2000.
 7. Rosenman AS. Babies Jessica, Richard, and Emily: the need for legislative reform of adoption laws. *Chicago Kent Law Review* 1995;70:1851–95. Macklin R. Artificial means of reproduction and our understanding of the family. In: Mappes TA, DeGrazia D, eds. *Biomedical Ethics*, 4th ed. New York: McGraw-Hill; 1996:514 [citing *Smith & Smith v. Jones & Jones*]. Annas GF. Baby M: babies (and justice) for sale. *Hastings Center Report* 1987;17(June):13–5.
 8. Lewontin RC. The confusion over cloning. In: Pence GE, ed. *Flesh of My Flesh: The Ethics of Cloning Humans: A Reader*. Lanham, Md.: Rowman & Littlefield; 1998:129–39. See also: Narayan U. Family ties: rethinking parental claims in light of surrogacy and custody. In: Narayan U, Bartkowiak J, eds. *Having and Raising Children: Unconventional Families, Hard Choices, and the Social Good*. University Park: Penn State University Press; 1999:65–86.
 9. See note 2, Strong 1998:280–1. Also see note 2, Murphy 1999:364. Also see note 2, Fitzgerald 1998:220. Also see note 3, Robertson 2000:46–7.
 10. Overall C. *Human Reproduction: Principles, Practices, Policies*. New York: Oxford University Press; 1993.
 11. See note 8, Lewontin 1998:134. Emphasis in original. Lewontin mistakenly identifies *genetic* parenthood with *biological* parenthood, when in fact gestation is obviously also a biological process and so grounds another form of biological parenthood. But as I shall demonstrate, the fact of cloning is irrelevant to gestationalist accounts of parenthood.
 12. See note 2, Silver, Silver 1998:598–600. In the discussion that follows, I draw on Silver and Silver’s case of “Amy” and “Jane,” though the quotation corresponding to note 14 appears in the context of their case of “Florence” and “Gail.” This has no effect on Silver and Silver’s account, for the two cases are parallel in this way.
 13. This formula is in fact somewhat idealized, as processes like crossing over and spontaneous mutations may reduce or increase F’s chromosomal relationship to one parent or the other.
 14. See note 2, Silver, Silver 1998:599.
 15. See note 2, Silver, Silver 1998:599. I have substituted “P” and “T” for “Amy” and “Jane,” respectively.
 16. See note 2, Silver, Silver 1998:no. 15.
 17. See note 2, Silver, Silver 1998:602.
 18. See note 2, Silver, Silver 1998:604.
 19. See note 2, Silver, Silver 1998:604.
 20. It should be noted that this case brings out a problem frequently found in the literature on reproductive biotechnology, and particularly cloning: proponents, despite portraying themselves as libertarian in their support of alternative families, are in fact often strikingly conservative. Hence Silver and Silver forget that, sometimes, eldest siblings have to act as parents; as a result, Silver and Silver’s main concern in sorting out parenthood is *inheritance*. Murphy rightly criticizes Strong’s conservatism: Strong defends cloning exclusively for heterosexual married couples that happen to be infertile. See note 2, Strong 1998. Also see note 2, Murphy 1999. Robertson is perhaps the extreme example, claiming to defend cloning in fully general terms “as a reproductive right” but making clear whom he really means to include: “Legitimate, family-centered uses of cloning . . .” (p. 42); “the most likely uses of cloning would enable a married couple . . .” (p. 46); “. . . will assure the child a two-parent rearing situation” (p. 55); and so forth. See note 3, Robertson 2000. Apart from being either outright false or merely speculative, all these claims build in conservative assumptions about family legitimacy—assumptions that sacrifice alternative families on the altar of alternative reproduction. Frankly, if the only way to legitimate reproductive cloning is to shove alternative families back into the closet, it is hard to see that the benefit would be worth the cost.
 21. It may then be noted that, on gestationalism, no man could ever become a parent by cloning. But this makes cloning neither better nor worse, from a (monistic) gestationalist view, than ordinary fatherhood. See: Rothman BK. *Recreating Motherhood*. New Brunswick, N.J.: Rutgers University Press; 1988.

22. O'Neill O. Begetting, bearing, and rearing. In: O'Neill O, Ruddick W, eds. *Having Children*. New York: Oxford University Press; 1979:25-38. Hill JL. What does it mean to be a "parent"? the claims of biology as the basis for parental rights. *New York University Law Review* 1991;66:353-420.
23. Roberts MA. Good intentions and a great divide: having babies by intending them. *Law and Philosophy* 1993;12:287-317.
24. Dawkins R. *The Selfish Gene*, 2nd ed. New York: Oxford University Press; 1989:28.
25. See note 2, Silver, Silver 1998:no. 15. Quoted terms in this paragraph are from Silver and Silver, passim.
26. See note 2, Silver, Silver 1998:no. 15.
27. See note 8, Lewontin 1998:133.
28. Bayne T, Kolers A. Toward a pluralistic account of parenthood. *Bioethics* 2003;17:221-42.
29. Anderson ES. Is women's labor a commodity? *Philosophy and Public Affairs* 1990;19:80.